Essays on Immigrant Women's Labor Supply, Time Use and the Impact of E-Verify Policy

By

Jing Fu

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Chair: Donna Ginther

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Joshua Rosenbloom

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Jianbo Zhang

_____

ChangHwan Kim

_____

Dietrich Earnhart

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The dissertation committee for Jing Fu certifies that this is the approved version of the following dissertation:

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ABSTRACT

The three essays in this dissertation mainly focus on immigrant women's labor supply behaviors, time allocation with children and the impact of E-Verify policy on immigrants' home ownership. Asian immigrants have grown as a share of the US population during the past decade and are expected to be the nation's largest immigrant group in 2055. Asian immigrants are not just adding numbers in the population, but also affecting labor market, raising and educating the next generation, and making a sizable contribution to housing market. In the first essay, using the data from the American Community Survey (ACS) 1-year estimates from 2006 to 2011, Asian immigrant women's labor supply behaviors are examined by comparing them with other immigrant women and native women's labor supply behaviors and investigating the possible determinants of Asian immigrants' labor supply behaviors. The results show that native non-Asian women having children under age five in the household work less hours than native Asian women and Asian first-generation immigrant women who have children under age five. Moreover, having more than two adults (e.g. grandparents) rather than themselves or their spouse, both native Asian women and Asian first-generation immigrant women spend more time in work market than native non-Asian women. It means that extra adults in the household share in the division of labor in the family so that native Asian women and Asian first-generation immigrant women can focus more on the work outside of the home rather than unpaid housework. Also, compared to native non-Asian women and native Asian women, Asian first-generation immigrant women have lower employment rates and are less responsive to hourly wage and spouses' hourly wages. It is also observed that the country of origin has effects on immigrants' labor supply behaviors. Married women from male-dominated societies work fewer hours than other Asian immigrant women. In the second essay, the 2005-2011 American Time

Use Survey (ATUS) is used to analyze immigrant women's time allocation with their children, which is also linked to data files from the Current Population Survey (CPS) to offer more information about each individual. The results indicate that working immigrant women spend more time on educational child care than working native women; and highly educated women are spending more hours on educational child care. Both working and non-working immigrant women spent less time on leisure than native women. The last essay uses data from the American Community Survey (ACS) 1-year estimates during the period 2004-2015 to examine whether E-Verify mandates have an impact on immigrants' housing decisions in the states that adopted the E-Verify mandates, compared to those without E-Verify mandates. A difference-in-differences methodology (DID) is used to analyze the data. E-Verify mandates are used to help employers verify the employment eligibility of newly hired employees and reduce the unauthorized immigrant workers in the United States. While E-Verify mandates affect unauthorized immigrant workers' employment, they also have significantly negative impacts on all immigrants' employment and home ownership. Immigrants living in the states that adopted E-Verify mandates are less likely to own homes or purchase houses there.

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1. INTRODUCTION

The population of Asian immigrants increased from 491,000 in 1960 to about 17.6 million in 2016, representing a 3,476 percent increase. Looking forward, the Pew Research Center projected that Asian immigrants would eventually become the nation's largest immigrant group, surpassing Hispanics in 2055, and making up 38% of all U.S. immigrants. Meanwhile, immigrants play an important role in the labor market, housing market, and being parents educating next generation. This paper mainly focuses on immigrants and examines their labor supply behaviors, time allocation with children, and how E-Verify mandates impact and change immigrants' home ownership.

In the first essay, using the data from the American Community Survey (ACS) 1-year estimates from 2006 to 2011, the labor supply behaviors among Asian first-generation immigrant (AI) women, native Asian (AN) women, native non-Asian (ON) women and non-Asian immigrant (OI) women are examined and compared; the effect of having more adults in the household with children is explored; and the labor supply behaviors of women born in the male-dominated countries are examined. OLS regression, 2SLS regression and logistic regression are used to analyze the data. The results show that Asian first-generation immigrant (AI) women have significantly different labor supply behaviors from others. Married AI women have lower own and cross wage elasticities than ON women with a high school degree or less, but higher elasticities than ON women with some college education and college graduates. This suggests that with lower education levels, married AI women's labor supply behaviors do not respond to their own wage and their spouse's wage as much as ON women's. The results also show that in households with children, having more than two adults rather than themselves or their spouses, AI women and AN women spend much more time in market work, while ON women work

fewer hours under the same conditions. This means that extra adults in the AI and AN women's household share in the division of labor in the family so that they can focus more on the work out of home rather than unpaid housework. In addition, married women from male-dominated societies, such as Japan, Korea and India, work fewer hours than other Asian immigrant women. This suggests that immigrant women from these male-dominated societies conform to gendered care-taking roles.

The second essay investigates the different time allocation with children between immigrant and native mothers. It also explores the different time allocations between immigrant and native women among all time use categories. Previous research has shown that the allocation of time with children plays an important role in the development of human capital and the subsequent socioeconomic status that will be transmitted from generation to generation. Also, Becker (1991) states that the time parents spend with their children can be seen as investments into the production of child quality. In the second essay, the 2005-2011 American Time Use Survey (ATUS) is used to analyze immigrant women's time allocation with their children and their daily time use. The results demonstrate that, on average, immigrant women do not spend as much time as native women on total child care, but working immigrant women do spend more time with their children on educational child care than working native women. Meanwhile, as expected, higher education levels are related to more hours spent on educational child care for both native women and immigrant women. In terms of all time use categories, the results show that marital status is associated with women's time use. Non-working women who are married spend more hours on child care and on nonmarket work than other non-working women who are not married, and, similar to non-working women, working women who are married spend more

time on nonmarket work than other working women who are not married. Meanwhile, married women lose their leisure time since they spend more time on nonmarket work with limited time.

In the last essay, using data from the American Community Survey (ACS) 1-year estimates during the period 2004-2015 and difference-in-differences methodology (DID), the study examines whether E-Verify mandates have an impact on immigrants' housing decisions in the states that adopted the E-Verify mandates compared to states without mandates. Even though E-Verify intends primarily to prevent illegal immigrants from obtaining employment illegally in the United States, it has unavoidable and unintended effects on all immigrants, including the legal immigrants. Some legal immigrants or natives have household members, like siblings, parents, or a spouse, who are unauthorized. The legal immigrants or natives may have to leave the state and relocate their homes due to the E-Verify mandates' impact on their unauthorized family members. The results confirm that E-Verify mandates reduce the probability of immigrants' home ownership. Immigrant living in the states that adopted E-Verify mandates are less likely to own homes, or purchase houses there. Additionally, E-Verify mandates have significantly negative effects on immigrants' labor force participation as well.

Overall, the first two essays of this dissertation show how Asian immigrant women, as members of the model minority, differ from other immigrant women and native women. The final chapter examines how policies designed to prevent illegal immigrants from working have unintended consequences.

Married Asian first-generation immigrant women work significantly more hours than other immigrant women and, having extra adults in the household, Asian first-generation immigrant women are more likely to work more hours than native women and other immigrant women. This suggests that Asian cultural preferences contribute to them being the "model immigrants."

Also, working immigrant women spend more time on educational child care than working native women. Especially, lower educated immigrant women spend more time on educational child care then lower educated native women. The investments in children will contribute to the next generation's educational attainments and affect their roles in the US economy. Moreover, E-Verify mandates significantly reduce the possibility of immigrants' home ownership in the states that adopted E-Verify in the specific years. These unintended consequences will create a drag on economic growth in the states that adopted this policy since housing is such a large sector in the US economy.

Taken together, these essays provide a more complete understanding of the role of all immigrants, especially Asian immigrants, in the US economy.

2. ASIAN IMMIGRANT WOMEN'S LABOR SUPPLY

2.1 Introduction

The foreign-born[1] population from Asian countries is the U.S.'s second largest immigrant population by the world region of birth, behind those from Latin America. According to the American Community Survey 2013, one-year estimates, in the United States there are a total of 12,176,983 foreign-born people from Asian countries, 53.4 percent of which are women. Meanwhile, about 2.55 percent of the total population (316,128,839) in the United States is native-born[2] Asian women. In 2013, the Bureau of Labor Statistics[3] (BLS) projects that Asians in the labor force will increase by about 2.0 million during the 2012-2022 period and the share of Asians in the 2022 labor force is expected to be 6.2 percent, and definitely, about half of this increase comes from women. It is obvious that the increase in the number of Asian women in the workforce reflects their continued high immigration and very high labor force participation rate. As a model minority group, it has been shown that Asian-Americans place a greater value in marriage, education, parenthood, hard work and career success (Pew Research Center, 2012). As Asian-Americans have a very high labor force participation rate, it is important to examine the difference in labor supply behaviors among Asian first-generation immigrant women, native Asian women, native non-Asian women and non-Asian immigrant women, and to investigate the reasons why they are different.

[1] The U.S. Census bureau defines the foreign-born as individuals who had no U.S. citizenship at birth. The foreign born population includes naturalized citizens, lawful permanent residents, refugees, asylums, legal nonimmigrants (including those on student, work, or certain other types of temporary visas), and persons residing in the country without authorization.

[2] The native-born population includes anyone who was a U.S. citizen at birth. The native population includes those born in the United States, Puerto Rico, American Samoa, Guam, the Northern Marianas, or the U.S. Virgin Islands, as well as those born abroad of at least one U.S. citizen parent.

[3] See http://www.bls.gov/news.release/pdf/ecopro.pdf.

To explore Asian women's labor supply behavior, four groups of women are mainly examined in the paper, including Asian first-generation immigrant women (AI)[4], native Asian women (AN), native non-Asian women (other natives) (ON) and non-Asian immigrant women (other immigrants) (OI). Table 2-1 shows the definition for each group of women. The "AN women" group is defined as women whose race is Asian but are born in the United States. "AI women", are women whose race is Asian but are born in the Asian countries. "ON women" are women who are not Asian but are born in the United States. "OI women" are foreign-born women that are not Asian, and are not born in the Asian countries. Note that women, who were Asian but born neither in the United States nor in any Asian countries, are not included in the sample (19,484 married women and 6,166 single women).

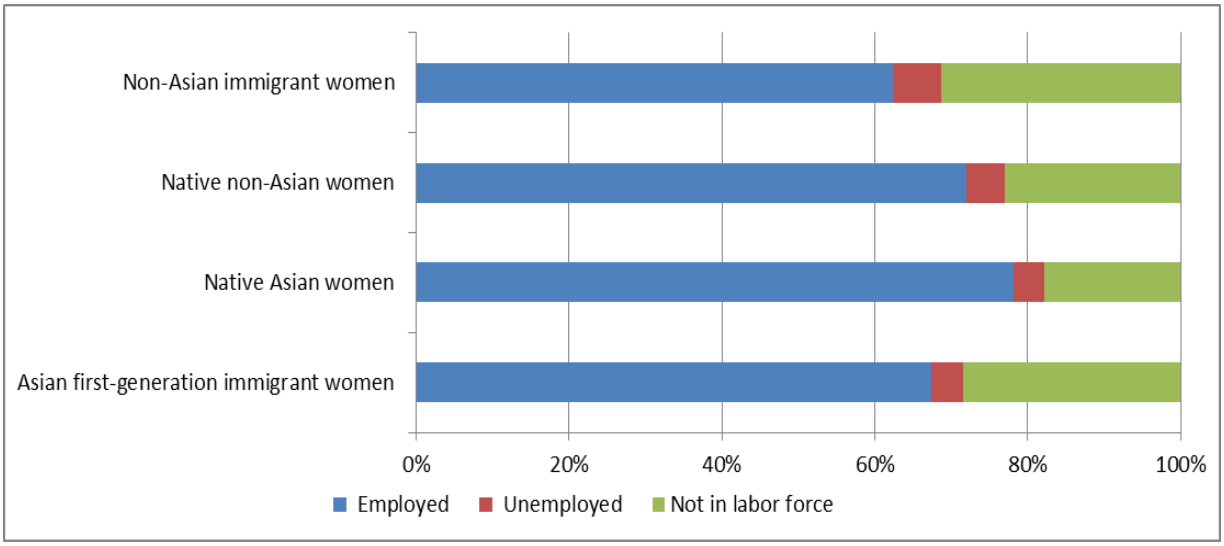
Table 2-1 The Definitions of Asian First-generation Immigrant Women, Native Asian Women, Native Non-Asian Women and Non-Asian Immigrant Women.

Four Groups of Women	Born in the U.S.	Born in Asian Countries	Race
Asian first-generation immigrant women (AI)	No	Yes	Asian
Native Asian women (AN)	Yes	No	Asian
Native non-Asian women (ON)	Yes	No	Various
Non-Asian immigrant women (OI)	No	No	Not Asian

AI, AN, ON and OI women show very interesting and various labor supply behaviors. According to 2013 American Community Survey one-year estimates (see Figure 2-1), 78.15 percent of AN women are employed compared with 72.02 percent of ON women. Comparatively, the employment rates of AI women (67.42%) and OI women (62.38%) are lower. "Not in labor force" rates are 28.37 percent for AI, and 31.28 percent for OI women, which are much higher than that of AN women. Even though AI women and AN women are all Asian and have many similar behaviors, based on these data, their employment status show a few

[4] These abbreviations will be used for this chapter.

differences that AI women have much higher "not in labor force" rates and lower employment rates than AN women.



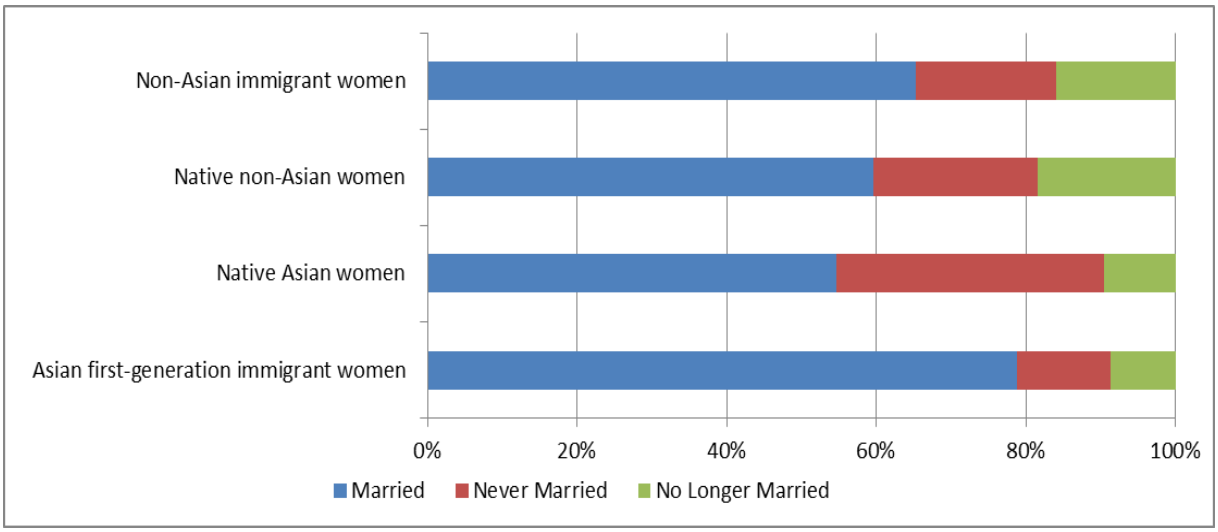
Source: 2013 American Community Survey one-Year Estimates.

Figure 2-1 Women's Employment Status by Four Groups.

In general, women's labor supply behaviors have important implications for marriage, fertility, child care, education levels and male-female wage differentials. Figure 2-2 shows that women's marital status in the four groups. Most of the AI women and OI women are married[5], of which the marriage rate are 78.8 percent and 65.28 percent, respectively. The marriage rates of these two groups of women are higher than that of ON women and AN women. A large number of AN women are never married[6], about 35.78 percent, are "no longer married"[7]. The "no longer married" rates of both OI women and ON women are about twice as high as that of AN women and AI women. For marital status, AN women and AI women have very similar and lower "no longer married" rates. The stability of marriage may affect women's labor supply. In terms of educational attainment, as shown in Figure 2-3, 57.1 percent of AN women have some college education and 50.07 percent of ON women have the same educational attainments. But, only

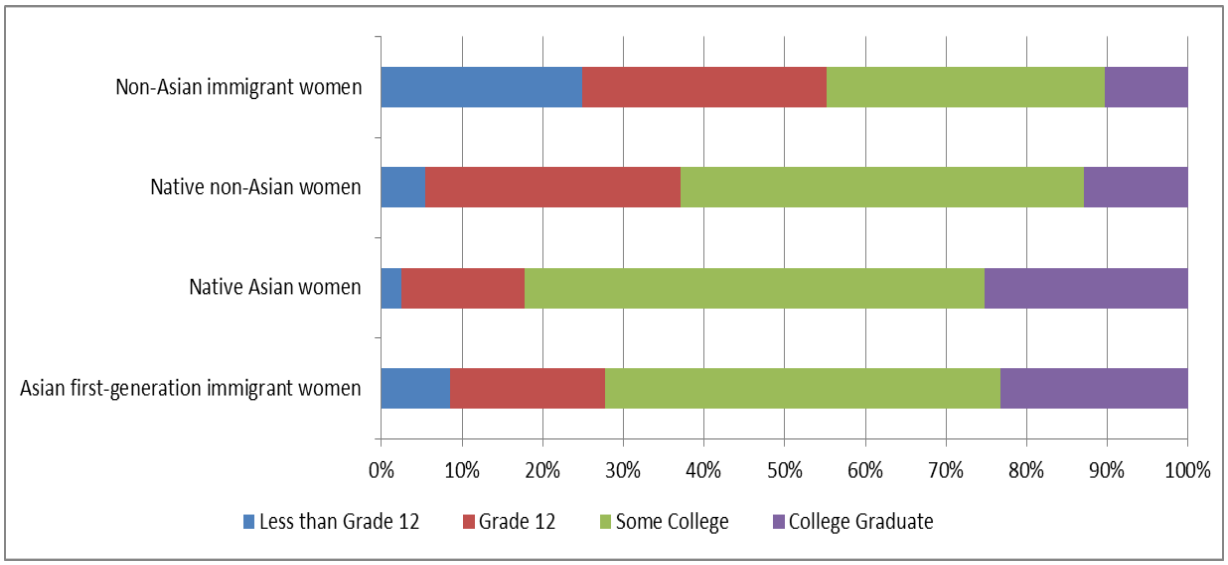
[5] Married: includes now married spouse present and now married spouse absent.
[6] Never married: includes single.
[7] No longer married: includes divorced, widowed, and separated.

12.89 percent of ON women have college graduate education, compared with 25.21 percent of AN women and 23.02 percent of AI women. Unsurprisingly, AN women and AI women have higher educational attainments; OI women have the lowest educational attainments among all other groups of women. Additionally, according to ACS 2013 one-year estimates, 5.3 percent of Asian women gave birth in the past 12 month, compared with 5 percent of White alone women which is only part of ON women. With higher educational attainments, lower fertility rates, lower "no longer married" rates, I expect that AN women and AI women have significantly different labor supply behaviors from ON women and OI women.



Source: 2013 American Community Survey one-Year Estimates.
Note: Married includes now married spouse present and now married spouse absent; never married includes single; no longer married includes divorced, widowed, and separated.

Figure 2-2 Women's Marital Status by Four Groups.



Source: 2013 American Community Survey one-Year Estimates.

Figure 2-3 Educational Attainment by Race.

Since unmarried women's labor supply is very similar to unmarried men's, much of the literature on women's labor supply has focused on married women's labor supply. However, there is a limited literature that compares the labor supply behaviors among AI women, AN women, ON women and OI women. In this paper, married women's labor supply behaviors are primarily studied because changes in the labor supply behaviors of married women have driven the changes in labor supply for women overall (Blau and Kahn 2006). Single women's labor supply behaviors are also examined. I will investigate the different labor supply behaviors among AI women, AN women, ON women and OI women.

This paper proceeds as follows: Section 2 presents previous literature; Section 3 describes data and descriptive statistics; and Section 4 describes the model I used to analyze the data. In Section 5 the results are concluded.

2.2 Literature

Immigrant women's labor supply behaviors have been researched widely by economists. The early and ongoing research uses culture to explain variation in economic outcomes of immigrants. Fernández and Fogli (2006, 2009) use past female labor force participation and total fertility rates from the women's country of ancestry as cultural proxies and conclude that culture is more likely to play an important role in explaining the second generation immigrant women's work and fertility. This is consistent with Reimers (1985) and Antecol (2000) who find that cultural factors play a role in explaining inter-ethnic variation in immigrant women's labor force participation rates. Gevrek, Z., Gevrek D. and Gupta (2011) also use relative women's labor force participation and total fertility rates in the women's country of ancestry as cultural proxies, and find that culture matters for the women's labor supply. More importantly, they show that the impact of culture proxies is significantly larger for women with immigrant parents who share same ethnic background than for those with intermarried parents.

Other literature shows the other possible factors that may affect married immigrant women's labor supply. Antecol and Bedard (2002) examine the effect of cohabitation on married immigrant women's decision to work in the United States. They find that cohabitation with parents or parents-in-law allows married immigrant women to share childcare and other household responsibilities, which increases the probability of working outside the home. In particular, the cohabitation effect is much larger among immigrants from Asia. Blau, Kahn and Papps (2008) show that there is a positive impact of source country characteristics on the labor supply assimilation profiles of married adult immigrant women by using 1980, 1990 and 2000 Census data. Immigrant women from countries where women have high relative labor force participation rates work substantially more than women coming from countries with lower

relative female labor supply rates. Their paper focuses on married women who immigrated as adults, age 18 or over. By using U.S. 1980 Census data, Duleep and Sanders (1993) indicate that both the labor force participation of married Asian immigrant women and European and Canadian married immigrants are affected by whether their husbands invest in skills specific to the U.S. labor market.

In terms of all immigrant women in the United States, in previous literature Schoeni (1998) uses 1990 Census data to state that immigrant women were less likely to participate in the labor force than native women, and this gap increased to 7 percentage points by 1990. His findings show that more-educated women are much more likely to participate in the labor force, and U.S.-born women are more educated than immigrant women. Immigrant women in this paper are not limited to Asian immigrant women. In this paper it also states that immigrant women who were born in the United Kingdom and Canada, Europe, Japan, Korea, China, the Philippines, and the Middle East have had steady or improved wages and unemployment relative to U.S.-born women.

Although it is not a surprise that AI women, AN women, ON women and OI women have different labor supply behaviors due to various social and economic reasons, it would be an interesting to determine the possible factors that cause the difference among these women, specially, between AN women and ON women. Obviously, for AN women, their higher education, lower divorce rates, and higher income may be correlated with their higher employment rates. Besides that, I want to explore whether more adults in the household with children will be related to their labor supply and support them to work more hours annually, and test if other groups of women have the same support of other adults at home as AN women. Also, AI women will be divided into different groups by their country of birth, in order to determine

whether those born in the male-dominated countries have significantly different labor supply behaviors than those who were born in the other countries with more gender equality. Moreover, years in the United States should affect immigrant women's labor supply behaviors.

In my paper, I expect to see that married AI women and married AN women's labor supply are significantly positively related to having more adults with children in the household and the labor supply behavior of AI women differ by the country of origin because of cultural differences.

2.3 Data and Descriptive Statistics

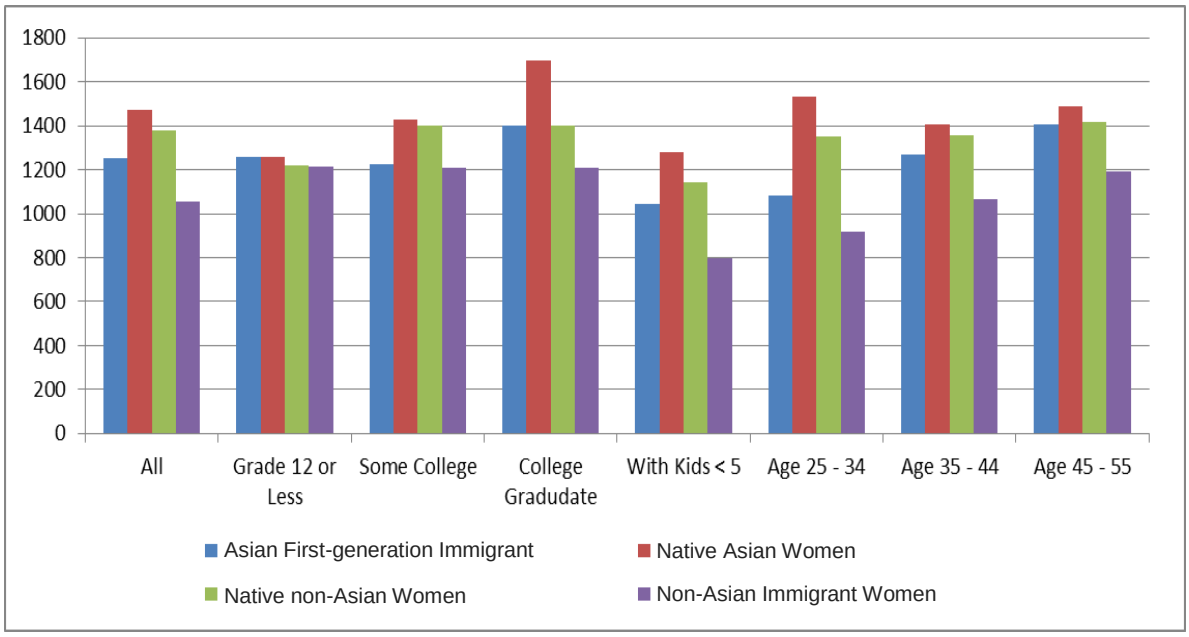
To investigate Asian immigrant women's labor supply, I use six years (2006 – 2011) of the American Community Survey (ACS) one-year estimates in my paper. ACS one-year estimates offer very large populations and more current data than 3-year and 5-year estimates. I focus on AI women, AN women, ON women and OI women aged 25-55, both married and single. These women are more likely to have a stable and legal job in the United States. AI women in this paper include women who came from, or are descended from, East Asia like China (including Hong Kong, Taiwan and Macau), Japan, Korea; Southeast Asia like Brunei, Cambodia, Indonesia, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam; and Southwest Asia like Afghanistan, India, Iran, Maldives, Nepal, specifically. Most of those Asian countries are the top immigrant-sending countries in the United States.[8] Table 2-2 shows the foreign born population from the Asia immigrant-sending countries in the United States.

In the sample there are a total of 1,861,227 married women including 1,531,317 ON women, 104,074 AI women, 18,688 AN women, and 207,148 OI women. Among all the single

[8] Camarota (2012). "Immigrants in the United States," Center for Immigration Studies. Table 4-4. Top 20 Immigrant-Sending Countries, 1990, 2000, 2010.

women, there are 538,228 ON women, 20,217 AI women, 12,441 AN women and 75,375 OI women.

The dependent variables of interest are annual work hours. Annual work hours are the product of usual hours worked per week and weeks worked per year. Individuals with zero work hours are included as well. Additionally, I also investigate labor force participation (i.e. working positive hours). Figure 2-4 indicates that annual hours of AN women in labor supply is the highest among subgroups of married women. Disaggregating by education, the graph shows a roughly similar pattern for each education group within which AN women work more hours annually than any other subgroups of married women. But, even being Asian, AI women's annual hours are slightly lower than both ON women and AN women. OI women work less than others. The same interesting pattern prevails among married women with children under age 5, and it is still true when I consider age groups separately.



Note: Sample includes those with zero as well as positive work hours.

Figure 2-4 Annual Hours Distribution for Selected Groups of Married Women.

Table 2-2 Place of Birth for the Asia Foreign-Born Population in the United States.

Place of Birth	Population in the United States	Percent of Total Population
Total:	40,917,701	
Asia:	12,176,983	29.76%
Eastern Asia:	3,803,484	9.30%
China:	2,383,831	5.83%
China, excluding Hong Kong and Taiwan	1,804,965	4.41%
Hong Kong	213,034	0.52%
Taiwan	365,832	0.89%
Japan	339,970	0.83%
Korea	1,070,335	2.62%
Other Eastern Asia	9,348	0.02%
South Central Asia:	3,285,550	8.03%
Afghanistan	67,169	0.16%
Bangladesh	203,179	0.50%
India	2,034,677	4.97%
Iran	363,972	0.89%
Kazakhstan	26,334	0.06%
Nepal	87,456	0.21%
Pakistan	342,603	0.84%
Sri Lanka	51,268	0.13%
Uzbekistan	48,197	0.12%
Other South Central Asia	60,695	0.15%
South Eastern Asia:	4,032,035	9.85%
Cambodia	164,746	0.40%
Indonesia	94,600	0.23%
Laos	196,154	0.48%
Malaysia	68,956	0.17%
Burma	116,775	0.29%
Philippines	1,843,989	4.51%
Singapore	31,293	0.08%
Thailand	233,547	0.57%
Vietnam	1,281,010	3.13%
Other South Eastern Asia	965	0.00%
Western Asia:	1,010,465	2.47%
Iraq	200,894	0.49%
Israel	127,079	0.31%
Jordan	65,618	0.16%
Kuwait	22,731	0.06%
Lebanon	124,256	0.30%
Saudi Arabia	88,894	0.22%
Syria	78,934	0.19%
Yemen	40,548	0.10%
Turkey	109,667	0.27%
Armenia	79,122	0.19%
Other Western Asia	72,722	0.18%
Asia,n.e.c.	45,449	0.11%

The most basic and important independent variable is hourly wages. It is defined as annual salary earnings divided by annual work hours for wages and salary workers. We consider hourly wage observations as invalid if they are less than $2 or greater than $200 per hour in 1999 dollars using the Personal Consumption Expenditures price index from the National Income and Product Market Accounts (see http://www.bea.gov). For non-workers, the self-employed and those with invalid wage observations, wages are imputed using a regression approach. The non-workers receive predicted wages based on the regression using those working 1-13 weeks sample because the imputation analysis show that non-workers group has very similar background to the workers who work 1-13 weeks. The self-employed workers and those with invalid wage observations were imputed hourly wages using the regression corresponding to the weeks they worked. This imputation is similar to that proposed by Juhn (1992), Juhn and Murphy (1997) and Blau and Kahn (2007). Appendix Table 2-14 compares own and spouse education, age, and number of own children in the household, number of children under age 5, between the samples of non-workers and those working 1-13 weeks per year. The difference of these variables across the two groups shows that it is reasonable and appropriate to use the working 1-13 weeks group to estimate the wages of non-workers.

There are other independent variables used to test the changes of the immigrant women's labor supply behaviors, such as the number of children in the household, the number of children under age 5 in the household, age, age squared, years in the United States. Years in the United States are only used when I focus on AI women and OI women. Another dummy variable is created to control for whether there is more than one adult in the household with children for single women, or whether there are more than two adults in the household with children for married women. Also, there are several dummy variables indicating educational attainment.

Educational attainment falls into one of the following levels: less than grade 12, grade 12, some college years, or college graduate. I create dummy variables for census years and birth place if born in Asia, including China (the omitted category), Japan, Korea, Philippines, Vietnam, India, and else. For married women, spouse's age and educational attainment will be included as well.

Table 2-5 and Table 2-6 provide descriptive statistics on dependent variable and some of the key explanatory variables for single women and married women respectively, including women's own wages, spouse's wages, nonwage income, number of own children, number of children under age 5 in the household, education attainments, whether more than one adult in the household with children for single women, whether more than two adults in the household with children for married women and years in the United State. In each table, column 1 and 2 report the descriptive statistics of AI women in the sample; column 3 and 4 report the descriptive statistics of AN women; column 5 and 6 report the descriptive statistics of ON women; column 7 and 8 report the descriptive statistics of OI women. In Table 2-5 it shows that the annual work hours of single AN women are, on average, 1669.650 hours, which is the highest one among four subgroups of women. In Table 2-6, it represents that married AN women work 1476.610 hours annually on average, which is also the highest one among four subgroups of women. On average, AN women and AI women's wages are higher than other subgroups of women's, as well as their spouse's wages.

I describe the method I am investigating and empirically testing in the next section.

2.4 Empirical Methodology

For empirical procedure, I use several methods to test AI women and AN women's labor supply behaviors, including OLS estimates, 2SLS estimates with instrumental variables, labor force participation estimates and subgroup analysis. The dependent variables is annual work

hours, in addition to the key wage and other income variables, I control in all single/married specifications for own (and spouse if married) age and age squared; eight Census region dummies; a metropolitan area dummy; own (and spouse if married) educational attainments; own (and spouse if married) dummies for black non-Hispanic, other race non-Hispanic, and Hispanic origin (with white non-Hispanic the omitted category) for ON women; and census year dummies.

First, I use OLS, 2SLS, and labor force participation estimates to test the different labor supply behaviors among four groups of women by controlling AI women, AN women, and ON women (with OI women the omitted category). Second, I examine labor supply behaviors for each group of women by using each of these regressions to compare the difference among them.

Table 2-3 Selected Descriptive Statistics for Single Women.

	AI Women (N=20217)		AN Women (N=12441)		ON Women (N=538228)		OI Women (N=75375)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Annual work hours	1526.630	10739.260	1669.650	9565.090	1470.460	10308.920	1316.230	11280.160
Own log wage	2.590	6.981	2.665	6.588	2.393	6.500	2.216	6.941
Nonwage income	0.306	40.987	0.468	56.248	0.355	54.658	0.195	43.880
Number of own children	0.186	6.870	0.174	6.124	0.550	11.086	0.681	13.486
Number of own children under age 5	0.043	2.596	0.048	2.666	0.118	4.223	0.150	5.120
Less than grade 12	0.076	2.913	0.022	1.530	0.090	3.105	0.306	5.394
Grade 12	0.172	4.161	0.157	3.816	0.333	5.124	0.304	5.384
Some college	0.542	5.489	0.610	5.118	0.472	5.427	0.309	5.408
College graduate	0.210	4.488	0.211	4.283	0.105	3.339	0.081	3.185
More than one adult in the household with children	0.042	2.207	0.040	2.049	0.080	2.951	0.113	3.704
Years in the United States	16.494	116.686	0.000	0.000	0.000	0.000	16.645	129.351

Note: Sample restricted to individuals ages 25-54. “Single women” includes all individuals who are not married.

Table 2-4 Selected Descriptive Statistics for Married Women.

	AI Women (N=104074)		AN Women (N=18688)		ON Women (N=1531317)		OI Women (N=207148)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Annual Work Hours	1238.990	10356.470	1476.610	9497.180	1376.440	9142.360	1045.080	10364.470
Own log wage	2.630	6.411	2.805	6.166	2.532	5.683	2.274	6.231
Nonwage income	0.398	52.760	0.725	70.545	0.558	66.524	0.255	47.890
Spouse log wage	2.979	7.119	3.097	6.540	2.901	6.046	2.655	7.064
Number of own children in the household	1.499	11.052	1.428	11.370	1.525	11.811	1.919	13.655
Number of own children under age 5 in the household	0.381	6.247	0.465	6.826	0.321	5.985	0.401	6.851
Less than grade 12	0.075	2.658	0.017	1.252	0.040	1.884	0.270	4.670
Grade 12	0.191	3.960	0.154	3.540	0.318	4.494	0.306	4.848
Some college	0.508	5.036	0.584	4.834	0.519	4.823	0.332	4.954
College graduate	0.226	4.212	0.246	4.220	0.124	3.177	0.091	3.022
Spouse less than grade 12	0.061	2.419	0.024	1.494	0.057	2.243	0.272	4.677
Spouse grade 12	0.174	3.819	0.194	3.877	0.358	4.629	0.308	4.855
Spouse some college	0.458	5.019	0.533	4.892	0.465	4.815	0.310	4.862
Spouse college graduate	0.307	4.646	0.249	4.241	0.119	3.127	0.111	3.298
More than two adults in the household with children	0.136	3.458	0.095	2.877	0.055	2.208	0.142	3.671
Years in the United States	15.205	101.447	0.000	0.000	0.000	0.000	17.500	118.683

Note: Sample restricted to individuals ages 25-54. “Married women” includes all individuals who are married with spouse aged 25-54 present.

2.4.1 OLS Regression

OLS regression was estimated to examine AN women and AI women's labor supply behaviors separately for single women and married women. This model is run for all single/married women, and also for eight different subgroups of women, such as single/married AI women, single/married AN women, single/married ON women and single/married OI women, to compare their labor supply behaviors by different influence factors.

The empirical models are given by:

$$H_i = \alpha + \beta_1 * lnW_i + \beta_3 * I_i + \beta_4 * D_i + \varepsilon_i \quad (2.1)$$

$$H_i = \alpha + \beta_1 * lnW_i + \beta_2 * lnW_s + \beta_3 * I_i + \beta_4 * D_i + \varepsilon_i \quad (2.2)$$

Where the dependent variable H_i is the annual work hours by a woman i[9]. W_i is the wage rate (the wage rate was computed as total annual salary earnings divided by annual work hours) of the woman i, whereas W_s is the wage rate of the woman i's spouse s if the woman i married. I_i is the non-labor market income of a woman i in the Model (2.1) or the family non-labor market income of a woman i in the Model (2.2). D_i includes all other control variables for each woman i. ε_i is the error term for individual i.

Model (2.1) is the traditional simple static labor supply model in which β_1 indicates the impact of a wage increase for a woman i, and β_3 is the income effects. D_i indicates variables such as age, age squared, years in the United States, dummy variables for the number of children in the household, the number of children under age 5 in the household d and whether more than one

[9] Borjas (2008) points out that the labor supply curve becomes more elastic the longer the time period over which the hours worked variable is defined. Labor supply is almost completely inelastic when I use the weekly hours as a variable. So I use the usual hours worked per year instead of the usual hours worked per week.

adult in the household with children for single women, and dummy variables for educational attainments of a woman *i*. Also, there are other dummy variables indicating that birth place of AI women. I use Model (2.1) to estimate single women's labor supply behaviors.

According to unitary preference approach, Model (2.2) is used to estimate married family labor supply behaviors. For each woman *i*, her labor supply depends not only on non-labor income (I_i), her own wage rate (W_i), but also on her spouse's wage rate (W_s). β_1 and β_3 in the Model (2.2) have the same meaning as that in the Model (2.1), while β_2, in the Model (2.2), indicates the impact of a wage increase for the woman *i*'s spouse *s*. In this case, I include the number of children under age 5 in the household and the number of children in the household as independent variables. There is one more dummy variable indicating that if there are more than two adults in the household with children.

Theoretically, in the Model (2.1) the income effect implies that an increase in non-labor income, holding the wage rate constant, reduces hours of work. However, an increase in the wage rate may lead to an increase or a decrease in hours of work due to the relationship between the substitution effect and the income effect. Model (2.2) shows the same income effect as Model (2.1). But in the Model (2.2) the cross-substitution effects of wife's and husband's leisure time should be considered if there is an increase in the wage rate of a woman *i* (Ashenfelter and Heckman 1974). The increase in the labor force participation rates of women could be due not only to a rise in the market wage but also to a decline in women's reservation wages. Also, an increase in the number of children in the household will likely increase women's reservation wages and reduce the probability that the women will work. Due to the decline of fertility, women labor force participation increases. In the opposite direction, women work more not

because they have fewer children, rather, they have fewer children because the rising wage induces them to reduce their time in the household sector and enter the labor market[10].

2.4.2 2SLS Regression

In labor supply analysis, there are two serious issues: one is measurement error, the other one is omitted variables. The American Community Survey provides annual personal salary earnings instead of hourly wages, so the wage variable is computed by dividing annual salary earnings by annual work hours for wages and salary workers. If there is measurement error in annual work hours then the coefficient on that variable in OLS regression will be biased toward zero. In addition, unobserved factors may be correlated with wages and labor supply. Thus, researchers use instrumental variable to control for the endogeneity of wages in labor supply models (Baker and Benjamin 1997; Juhn and Murphy 1997; Blau et al. 2003; Blau and Kahn 2007).

In this paper, I estimate single/married women's labor supply model by using IV with own wage for single women model, and with own wages and spouse's wage for married women model each considered endogenous in the models, used in Blau and Kahn (2007).

The empirical two-stage least squares for single women model are given by:

$$\textit{In the first stage:} \quad ln\widehat{W}_i = \alpha_0 + \alpha_1 * E_i + \alpha_2 * C_i + \delta_i \qquad (2.3)$$

$$\textit{In the second stage:} \quad H_i = \beta_0 + \beta_1 * ln\widehat{W}_i + \beta_3 * I_i + \beta_4 * D_i + \varepsilon_i \qquad (2.4)$$

Where $ln\widehat{W}_i$ is an endogenous variable.

[10] Angrist and Evans, "Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size," American Economic Review 88 (June 1998): 450-77.

The empirical two-stage least squares for married women model are given by:

$$\textit{In the first stage:} \quad ln\widehat{W}_i = \alpha_0 + \alpha_1 * E_i + \alpha_2 * E_s + \alpha_3 * C_i + \delta_i \quad (2.5)$$

$$ln\widehat{W}_s = \alpha_0 + \alpha_1 * E_i + \alpha_2 * E_s + \alpha_3 * C_s + \delta_s \quad (2.6)$$

$$\textit{In the second stage:} \quad H_i = \beta_0 + \beta_1 * ln\widehat{W}_i + \beta_2 * ln\widehat{W}_s + \beta_3 * I_i + \beta_4 * D_i + \varepsilon_i \quad (2.7)$$

Where $ln\widehat{W}_i$ and $ln\widehat{W}_s$ are endogenous variables.

In the first stage, region dummies and a dummy for Metro areas are included for both single and married women. Own and spouse educational attainments are included in the first stage log wage regression for married women, and only own educational attainments are included for single women. As a result, in the labor supply models I do not control for schooling. In the second stage, like the OLS regression, the dependent variable H_i is the annual work hours by a woman i[11]. W_i is the wage rate of the woman i, and W_s is the wage rate of the woman i's spouse s if the woman i married. I_i is the non-labor market income of a woman i in the single women model and the family non-labor market income of a woman i in the married women model. D_i includes all other control variables for each woman i, except schooling. ε_i is the error term for individual i.

The result of single women is statistically significant and F (22, 646260) = 3376.24, p<0.0001; the result for married women is statistically significant and F (25, 1861226) = 7967.64, p<0.0001. Table 2-5 shows the first stage estimates for single women and Table 2-6 presents the first stage estimates for married women.

[11] Borjas (2008) points out that the labor supply curve becomes more elastic the longer the time period over which the hours worked variable is defined. Labor supply is almost completely inelastic when I use the weekly hours as a variable. So I use the usual hours worked per year instead of the usual hours worked per week.

Table 2-5 Single Women 2SLS First Stage Estimates.

	ALL	AI Women	AN Women	ON Women	OI Women
Grade 12	0.226**	0.181**	0.224**	0.26**	0.226**
	(0.005)	(0.017)	(0.037)	(0.003)	(0.005)
Some college	0.607**	0.605**	0.599**	0.609**	0.607**
	(0.005)	(0.016)	(0.035)	(0.003)	(0.005)
College graduate	1.011**	0.892**	0.907**	0.995**	1.011**
	(0.007)	(0.017)	(0.037)	(0.003)	(0.007)

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy.
** Denotes significance at 1%

Table 2-6 Married Women 2SLS First Stage Estimates.

	ALL	AI Women	AN Women	ON Women	OI Women
Dependent Variable: Own log wages					
Grade 12	0.277**	0.172**	0.263**	0.262**	0.203**
	(0.002)	(0.008)	(0.034)	(0.002)	(0.003)
Some college	0.586**	0.550**	0.568**	0.559**	0.525**
	(0.002)	(0.008)	(0.033)	(0.002)	(0.003)
College graduate	0.963**	0.917**	0.938**	0.937**	0.904**
	(0.002)	(0.009)	(0.034)	(0.003)	(0.005)
Spouse Grade 12	0.133**	0.066**	0.117**	0.115**	0.098**
	(0.002)	(0.009)	(0.029)	(0.002)	(0.003)
Spouse Some college	0.218**	0.175**	0.235**	0.195**	0.213**
	(0.002)	(0.009)	(0.028)	(0.002)	(0.003)
Spouse College graduate	0.275**	0.238**	0.288**	0.253**	0.301**
	(0.002)	(0.009)	(0.029)	(0.002)	(0.005)
Dependent Variable: Spouse's log wages					
Grade 12	0.176**	0.112**	0.185**	0.135**	0.111**
	(0.002)	(0.009)	(0.037)	(0.003)	(0.004)
Some college	0.259**	0.257**	0.274**	0.204**	0.235**
	(0.002)	(0.009)	(0.036)	(0.003)	(0.004)
College graduate	0.311**	0.366**	0.332**	0.246**	0.321**
	(0.002)	(0.010)	(0.037)	(0.003)	(0.006)
Spouse Grade 12	0.214**	0.168**	0.238**	0.203**	0.143**
	(0.002)	(0.010)	(0.030)	(0.002)	(0.004)
Spouse Some college	0.495**	0.532**	0.536**	0.479**	0.446**
	(0.002)	(0.010)	(0.030)	(0.002)	(0.004)
Spouse College graduate	0.859**	0.886**	0.891**	0.847**	0.848**
	(0.002)	(0.010)	(0.032)	(0.003)	(0.006)

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy.
** Denotes significance at 1%.

2.4.3 Logistic Regression

I also use logistic regression to estimate the probability of labor force participation among single/married AI women, AN women, ON women and OI women. Labor force participation is used as the dependent variable. For each individual, labor force participation is either equal to one if working or looking for work or equal to zero otherwise. The explanatory variables for single women include the number of children in the household, the number of children under age 5 in the household, if there are more than one adult with children in the household, educational attainments, birth place if born in Asia, years in the United States. For married women, besides that, the specification also controls for spouse's education attainments and whether more than two adults with children in the household.

2.4.4 Group Analysis

Besides regression analysis, group analysis also has been used to explore the difference within origin of country groups, married women with children under age 5 groups, educational attainment groups and age groups. The basic regression analysis may accurately reflect difference among four different groups of women in average behavior; however, it is possible that in the basic regression model some factors are not controlled for adequately. For this reason, I estimate the labor supply behavior by subgroups as well. It is very interesting to explore each group's behaviors in greater depth. In the country origin analysis, AI women are sorted into different groups by their birth places to examine their labor supply behaviors. The results will be discussed in the next section.

2.5 Regression Results

Table 2-7 and Table 2-8 show the analysis results of single women's labor supply behaviors among all four subgroups of women.

Table 2-7 shows the results of OLS, 2SLS and labor force participation estimates which test the different labor supply behaviors among AI women, AN women, ON women and OI women (the omitted category). Column 1 reports OLS estimates; column 2 reports 2SLS estimates; and column 3 reports labor force participation estimates. For single women, 2SLS results show that their work hours are positively related with own wages but negatively related with the number of children in the household, which means that the more children under age 5 the less annual work hours. However, it is surprising that with more than one adult in the household with children, single women will decrease their annual work hours by 74.117 generally. So, another adult at home does not help single women's labor supply at all. Single AI women work less than OI women, meanwhile, AN women work more than OI women and ON women as well. The results of labor force participation estimates represents roughly similar results to 2SLS estimates.

Table 2-7 Single Women OLS, 2SLS and Labor Force Participation Estimates.

	OLS Estimates	2SLS Estimates	Labor Force Participation Estimates
Own log wage	242.048**	968.835**	
	(2.159)	(4.093)	
Nonwage income	-2.704**	-2.343**	
	(0.226)	(0.248)	
Number of own children in the household	6.599**	-8.119**	0.068**
	(1.387)	(1.521)	(0.000)
Number of own children under age 5	-132.269**	-127.806**	-0.284**
	(3.444)	(3.788)	(0.001)
More than one adult in the household with children	-68.471**	-74.117**	-0.156**
	(4.244)	(4.666)	(0.001)
Years in the United States	6.734**	8.638**	0.018**
	(0.250)	(0.275)	(0.000)
Born in Japan	-103.509**	-71.604*	-0.388**
	(27.928)	(30.724)	(0.007)
Born in Korea	-186.231**	-157.211**	-0.552**
	(21.158)	(23.277)	(0.005)
Born in Philippines	121.639**	164.833**	0.591**
	(18.818)	(20.676)	(0.005)
Born in Vietnam	153.554**	146.878**	0.533**
	(19.979)	(21.970)	(0.005)
Born in India	-49.828*	-8.887	-0.123**
	(22.966)	(25.258)	(0.006)
AI women	-110.534**	-92.876**	-0.435**
	(15.846)	(17.420)	(0.004)
AN women	88.068**	184.116**	0.255**
	(9.856)	(10.742)	(0.003)
ON women	61.095**	102.298**	0.138**
	(5.418)	(5.828)	(0.001)

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy, age and age squared, educational attainment dummies and census year dummies.

* Denotes significance at 5%. ** Denotes significance at 1%.

Table 2-8 Single Women OLS, 2SLS and Labor Force Participation Estimates by Four Groups.

	OLS Estimates				2SLS Estimates				Labor Force Participation Estimates			
	AI Women	AN Women	ON Women	OI Women	AI Women	AN Women	ON Women	OI Women	AI Women	AN Women	ON Women	OI Women
Own log wage	124.791**	213.141**	258.037**	139.122**	627.614**	766.004**	1002.196**	774.083**				
	(11.802)	(13.811)	(2.338)	(6.887)	(26.840)	(34.367)	(4.609)	(11.204)				
Nonwage income	-5.577**	-0.443	-3.072**	-1.674	-5.301**	-1.063	-2.778**	-1.302				
	(1.764)	(1.462)	(0.235)	(0.888)	(1.857)	(1.567)	(0.261)	(0.943)				
	9.166	23.775	18.520**	13.089**	-4.099	9.41118	3.745*	2.065	0.036**	0.198**	0.105**	0.057**
Number of own children	(14.373)	(19.300)	(1.544)	(3.764)	(15.057)	(20.634)	(1.711)	(3.977)	(0.003)	(0.006)	(0.000)	(0.001)
Number of own children	-113.266**	-150.015**	-138.575**	-147.057**	-104.452**	-149.562**	-135.318**	-139.585**	-0.135**	-0.539**	-0.309**	-0.307**
under age 5	(34.350)	(39.757)	(3.739)	(9.323)	(36.138)	(42.608)	(4.153)	(9.895)	(0.008)	(0.012)	(0.001)	(0.001)
More than two adults in the household with	8.367	-71.872	-87.278**	15.154	9.494	-81.694	-90.930**	14.573	0.188**	-0.133**	-0.215**	0.051**
children	(37.001)	(46.059)	(4.628)	(11.317)	(38.931)	(49.312)	(5.137)	(12.013)	(0.009)	(0.014)	(0.001)	(0.002)
Years in the United	14.192**			4.999**	14.675**			6.156**	0.036**			0.007**
States	(0.672)			(0.341)	(0.6945)			(0.355)	(0.000)			(0.000)
Born in Japan	-118.744**				-119.665**				-0.379**			
	(33.200)				(34.833)				(0.008)			
Born in Korea	-207.145**				-194.640**				-0.554**			
	(22.987)				(24.101)				(0.005)			
Born in Philippines	107.172**				99.185**				0.489**			
	(21.059)				(21.553)				(0.005)			
Born in Vietnam	25.866				-5.184				0.132**			
	(22.596)				(23.443)				(0.005)			
Born in India	-14.954				28.009				-0.024**			
	(25.247)				(26.346)				(0.006)			

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy, age and age squared, educational attainment dummies and census year dummies. * Denotes significance at 5%. ** Denotes significance at 1%.

Table 2-8 shows single women OLS, 2SLS, and labor force participation estimates by four subgroups of women. In the each estimate, the first column reports the results of AI women; the second column reports these of AN women; the third column reports these of ON women; the last column reports these of OI women. In the column 5, 6, 7 and 8, it shows 2SLS estimations for four groups of women. In the 2SLS estimates, it shows that, holding others constant, single ON women are more likely to work more hours with higher wages than other group women. They are more responsive to the change in hourly wages. By controlling for birth places, including Japan, Korea, Philippines, Vietnam, India, other Asian countries (with China the omitted category), the results show that single AI women born in the different countries have different labor supply behaviors. Single AI women who were born in China and Philippines are more likely to work more hours than other AI women; however, those who were born in Japan and Korea work less hours than others. For single AI women, years in the United States are positively and significantly associated with women's labor supply behavior. Single ON women with children in the household will increase work hours by 3.745 hours annually, but with children under age 5 in the household will decrease work hours by 135.318 hours annually. Interestingly, ON women have significantly negative relationships with the factors of having more than one adult in the household with children. One other adult in the household with children other than children's mother does not increase single ON women's labor supply or work hours, conversely, with one more adult in the household with children, single ON women will work fewer hours than usual. Furthermore, based on the results of labor force participation estimates, having one more adult in the household with children, both single AI women and OI women are more likely to work outside of home; however, both single AN and ON women work less. Years in the United States is a very important factor that affects AI women and OI women's

labor supply behaviors. With one more year in the United States, AI women will work 0.036 hours more annually, and OI women will work 0.007 hours more.

Table 2-10 to Table 2-13 represent the results of married women's labor supply behaviors. These results allow me to examine different labor supply among the four groups of married women and show that married AN women work more hours than any other three groups of married women and they are more likely to work outside of home than the other groups. For married women, AI women and OI women do not work as much as ON women and AN women. These results differ from single AI women that married AI women work significantly more than OI women. Married women having children in the household will reduce their work hours sharply; moreover, if they have children under age 5 in the household annual work hours will be even lower.

To compare each labor supply behavior among four groups of married women, OLS, 2SLS and labor force participation estimates are applied for each group separately. Table 2-11 shows the results of 2SLS estimates with instrumental variables (IV) that are presented for the four groups of married women mentioned earlier. AN women and ON women are more responsive to both their own wages and spouse's wages than other group women. For example, if AN women' own hourly wages increase by one unit then they will work about 946.097 hours more annually and if their spouse's hourly wages increase by one unit then they will work 724.412 hours less annually. However, AI's annual work hours do not change as much as AN and ON's with the increase in their own wages or their spouse's wages. With one more unit increase in their own wages, AI will work 768.034 hours more annually; and with one more unit increase in their spouse's wages, they will work 583.973 hours less annually. Moreover, married women with children in the household definitely will affect their labor supply negatively and with children

under age 5 in the household will have even more effect on their labor supply. But there seem to be no big differences for married AN women between the number of children in the household and the number of children under age 5 in the household. By controlling for the country of origin for AI, the estimates show that married AI women who were born in Japan, Korea and India work less hours than those born in China, Philippines, and Vietnam. Moreover, the results show that the factor of having more than two adults in the household with children shows positive effects on AN women's labor supply and negative effects on ON women. In other word, AN women's higher work hours are also positively related to having more than two adults in the household with children. Holding other factors constant, having more than two adults in the household with children, AN women work 45.965 hours more annually, but ON work 13.164 hours less. Thus, unlike married ON women, married AN women have the support of the extra adults at home and it is more possible for them to work more outside of home.

Labor force participation estimates in the column 9-12 show that women with children in the household are less likely to work; AI women, AN women and OI women are more likely to work outside with more than two adults in the household with children; ON women are less likely to work if they have other adults, except her and her spouse, in the household with children.

In this paper, Oaxaca decomposition approach is used to measure the unexplained gap in the means of the annual work hours between the two groups of women. As shown in the Table 2-9, the results show that the effect of characteristics, sharing 89% of the gap in the means of the annual work hours, mostly account for the gap in labor force between ON and AI women. It indicated that the different characteristics between ON and AI women can explain most of the different labor supply behaviors between ON and AI women. And, 65% of the gap in labor force

between AI and AN women is contributed by the differences in coefficients, and 35% of the gap is due to the differences in covariates. It suggested that the different labor supply behaviors between AI and AN women are mostly associated with the characteristics. Meanwhile, only 36% of the gap in labor force between AN and ON women is caused by the differences in coefficients and 64% of the gap can be explained by the difference in covariates.

Table 2-9 Oaxaca Decomposition Results.

	Covariates Effect	Coefficient Effect
AI and AN	35%	65%
AI and ON	11%	89%
AN and ON	64%	36%

In addition, I test married women labor supply behaviors by using subgroup analysis. First, I sort AI women into different groups by their birth places in the Table 2-12 and mainly focus on China, Japan, Korea, Philippines, Vietnam, and India, the top Asian immigrant countries. Coming from different countries, AI women have various responses to the change in hourly wages that women from China, Japan and India are much more responsive to the change in hourly wage than others. Also, women from Korea are more responsive to their spouse's hourly wages than those from other Asian countries. With children in the household, women from Japan, Korea and India reduce their labor supply more than those from other Asian countries. In these countries, women are less likely to work outside of the home, and these results support those cultural norms.

Secondly, Table 2-13 shows the results of elasticities for married women by subgroups including education groups, with children under 5 years' old groups and age groups. In the education groups, AI and AN women show very similar labor supply patterns. Both of them have higher own and cross wage elasticities in magnitude with some college education than with other

education. With college graduates education, AN women's own and cross wage elasticities are 0.1 and -0.2. However, ON women have higher own wage elasticity (0.5) with grade 12 or less education than those with higher education. Also, it has been pointed out that the numbers of children in the household shifts women's labor supply behavior. Specifically, in the Table 2-13, the own wage elasticities for mothers of young children are as high as 0.8 for AI women and 0.8 for AN women; ON and OI women have even higher own wage elasticities than AI and AN women. Having children less than 5 years old in the household, AI women's cross wage elasticity is -0.6, whose absolute value is the lowest one among the four subgroup women. Meanwhile, ON women have the highest cross wage elasticity (-0.8) in magnitude than other group women. For age group, it is obvious that age 45-55 group's own and cross wage elasticities are lower in magnitude than the younger age groups'. AI and AN women's own and cross wage elasticities at the age 35-44 group are more elastic than those at the other age groups. ON and OI women at the age 25-34 groups have the highest own wage elasticities among their own age groups. These elasticities results show that AI and AN women have very similar labor supply behavior by the subgroups of education, mothers with younger children and age. The results are consistent with theory, indicating that compensated wage elasticities are positive and income effects are negative.

Women's labor supply has been more sensitive to their own wages than men's labor supply. Blau and Kahn (2007) stated the changes in female labor force participation from 1980 to 2000 and found that there was a dramatic reduction in women's own wage elasticity and their cross wage elasticity fell by 38 to 47 percent in absolute value. Heim (2007) presented that married women's hours wage elasticities have decreased substantially from 0.36 to 0.14 over the past quarter century (1978-2002).

Table 2-10 Married Women OLS, 2SLS and Labor Force Participation Estimates.

	OLS Estimates	2SLS Estimates	Labor Force Participation Estimates
Own log wage	381.077**	929.321**	
	(1.293)	(4.041)	
Nonwage income	-3.003**	-3.228**	
	(0.099)	(0.106)	
Spouse log wage	-240.516**	-635.938**	
	(1.173)	(4.220)	
Number of own children	-102.616**	-123.665**	-0.206**
	(0.604)	(0.644)	(0.000)
Number of own children under age 5	-201.586**	-191.179**	-0.477**
	(1.259)	(1.351)	(0.000)
More than two adults in the household with children	56.168**	52.167**	0.113**
	(2.567)	(2.751)	(0.001)
Years in the United States	14.065**	15.8226**	0.037**
	(0.141)	(0.151)	(0.000)
Born in Japan	-432.048**	-471.682**	-1.034**
	(13.129)	(14.096)	(0.003)
Born in Korea	-311.653**	-307.367**	-0.825**
	(9.726)	(10.441)	(0.002)
Born in Philippines	105.277**	156.710**	0.458**
	(8.639)	(9.238)	(0.002)
Born in Vietnam	150.143**	145.058**	0.374**
	(9.800)	(10.517)	(0.002)
Born in India	-254.956**	-254.077**	-0.665**
	(7.807)	(8.384)	(0.002)
AI women	106.371**	129.586**	0.122**
	(8.172)	(8.780)	(0.002)
AN women	453.736**	526.446**	1.151**
	(7.231)	(7.7104)	(0.002)
ON women	374.294**	488.160**	1.021**
	(3.321)	(3.441)	(0.001)

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy, age and age squared, spouse age and age squared, educational attainment dummies, spouse educational attainment dummies and census year dummies.

* Denotes significance at 5%. ** Denotes significance at 1%.

Table 2-11 Married Women OLS, 2SLS and Labor Force Participation Estimates by Four Groups.

	OLS Estimates				2SLS Estimates				Labor Force Participation Estimates			
	AI Women	AN Women	ON Women	OI Women	AI Women	AN Women	ON Women	OI Women	AI Women	AN Women	ON Women	OI Women
Own log wage	278.222**	395.319**	396.994**	293.242**	768.034**	946.097**	945.199**	928.802**				
	(5.682)	(11.949)	(1.389)	(4.450)	(18.625)	(43.045)	(4.338)	(13.901)				
Nonwage income	-1.261*	-3.293**	-3.068**	-1.758**	-1.236*	-3.302**	-3.266**	-1.714**				
	(0.560)	(0.913)	(0.102)	(0.440)	(0.592)	(1.002)	(0.110)	(0.468)				
Spouse log wage	-211.054**	-225.811**	-242.288**	-166.317**	-583.973**	-724.412**	-658.330**	-502.831**				
	(4.983)	(11.329)	(1.295)	(3.608)	(17.488)	(43.165)	(4.536)	(14.377)				
Number of own children	-80.014**	-120.091**	-111.804**	-74.711**	-85.187**	-145.774**	-133.188**	-86.997**	-0.196**	-0.286**	-0.246**	-0.154**
	(3.176)	(6.838)	(0.658)	(1.808)	(3.347)	(7.441)	(0.708)	(1.908)	(0.001)	(0.001)	(0.001)	(0.001)
Number of own children under age 5	-142.434**	-161.383**	-207.772**	-192.278**	-135.764**	-135.634**	-195.580**	-186.198**	-0.301**	-0.334**	-0.514**	-0.342**
	(5.647)	(11.463)	(1.384)	(3.709)	(5.966)	(12.519)	(1.497)	(3.945)	(0.001)	(0.003)	(0.003)	(0.000)
More than two adults in the household with children	220.998**	31.804	0.700	103.730**	227.186**	45.965**	-13.164**	101.137**	0.588**	0.032**	-0.048**	0.230*
	(8.792)	(23.104)	(3.122)	(5.862)	(9.267)	(25.134)	(3.3735)	(6.221)	(0.002)	(0.006)	(0.008)	(0.001)
Years in the United States	17.304**			12.163**	18.073**			12.899**	0.045**			0.028**
	(0.341)			(0.203)	(0.351)			(0.211)	(0.000)			(0.000)
Born in Japan	-449.979**				-526.563**				-0.986**			
	(16.001)				(16.646)				(0.003)			
Born in Korea	-290.861**				-309.625**				-0.751**			
	(11.100)				(11.498)				(0.002)			
Born in Philippines	128.730**				130.147**				0.506**			
	(10.281)				(10.233)				(0.002)			
Born in Vietnam	88.031**				76.864**				0.144**			
	(11.487)				(11.919)				(0.002)			
Born in India	-196.136**				-203.698**				-0.465**			
	(9.058)				(9.437)				(0.002)			

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy, age and age squared, spouse age and age squared, educational attainment dummies, spouse educational attainment dummies and census year dummies. All models of ON women also include three race and Hispanic origin dummies and three race and Hispanic origin dummies for spouse. * Denotes significance at 5%. ** Denotes significance at 1%.

Table 2-12 Married Women -- Country of Origin Group Analysis.

	China	Japan	Korea	Philippines	Vietnam	India
Own log wage	882.490**	754.778**	747.543**	683.087**	412.517**	904.048**
	(38.216)	(75.864)	(67.245)	(34.514)	(50.703)	(39.761)
Nonwage income	-1.973	-2.707	-0.710	-2.237	-0.864	-1.623
	(1.245)	(2.672)	(1.883)	(1.208)	(1.853)	(1.246)
Spouse log wage	-834.554**	-544.485**	-1089.620**	-606.226**	-419.149**	-508.445**
	(32.888)	(72.055)	(79.340)	(45.565)	(51.446)	(34.684)
Number of own children in the household	-83.598**	-163.158**	-112.218**	-39.273**	-65.683**	-142.598**
	(9.517)	(15.063)	(12.549)	(6.368)	(9.306)	(7.754)
Number of own children under age 5 in household	-116.568**	-183.900**	-146.443**	-166.888**	-128.844**	-71.540**
	(15.504)	(25.503)	(20.932)	(13.105)	(16.259)	(11.669)
More than two adults in the household with children	227.956**	101.010	243.201**	201.316**	120.393**	265.394**
	(22.706)	(84.067)	(41.508)	(17.380)	(23.588)	(18.710)
Years in the United States	15.929**	29.294**	24.282**	7.662**	11.318**	24.737**
	(0.898)	(1.335)	(0.985)	(0.694)	(1.100)	(0.877)

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy, age and age squared, spouse age and age squared, educational attainment dummies, spouse educational attainment dummies and census year dummies. * Denotes significance at 5%. ** Denotes significance at 1%.

Table 2-13 Selected Elasticities Results for Married Women by Subgroup.

	AI Women	AN Women	ON Women	OI Women
Elasticities for education groups:				
Grade 12 or less:				
Own log wage	0.287	0.265	0.527	0.742
Spouse log wage	-0.239	-0.243	-0.272	-0.360
Nonwage income (divided by 1,000)	-0.002	-0.002	-0.002	-0.002
Some college:				
Own log wage	0.419	0.687	0.209	0.733
Spouse log wage	-0.489	-0.574	-0.386	-0.462
Nonwage income (divided by 1,000)	-0.001^	-0.002*	-0.002	-0.001*
College graduates:				
Own log wage	0.210	0.112	0.142	0.137
Spouse log wage	-0.137	-0.201	-0.259	-0.051
Nonwage income (divided by 1,000)	-0.001^	-0.003	-0.002	-0.001^
Elasticities for mothers with children under 5 years old:				
Own log wage	0.844	0.848	1.013	1.289
Spouse log wage	-0.560	-0.702	-0.832	-0.708
Nonwage income (divided by 1,000)	0.000^	-0.004	-0.002^	-0.002^
Elasticities for age groups:				
25-34:				
Own log wage	0.660	0.605	0.766	0.989
Spouse log wage	-0.481	-0.465	-0.600	-0.465
Nonwage income (divided by 1,000)	0.000^	-0.004	-0.002	-0.001^
35-44:				
Own log wage	0.652	0.668	0.668	0.837
Spouse log wage	-0.511	-0.576	-0.528	-0.501
Nonwage income (divided by 1,000)	-0.001^	-0.002^	-0.002	-0.001^
45-55:				
Own log wage	0.491	0.485	0.652	0.792
Spouse log wage	-0.367	-0.307	-0.400	-0.383
Nonwage income (divided by 1,000)	-0.001^	-0.002^	-0.003	-0.002

Note: Standard errors are in parentheses. All models include eight region dummies, a metropolitan area dummy, age and age squared, spouse age and age squared, educational attainment dummies, spouse educational attainment dummies and census year dummies. All models of ON women also include three race and Hispanic origin dummies and three race and Hispanic origin dummies for spouse. Elasticities are evaluated at the mean. All elasticities are significantly different from zero at the 1% level, except as noted otherwise. * Denotes significance at 5%.^ Denotes not significance.

2.6 Conclusions

This paper has examined differences in women's labor supply across Asian immigrant, native, and other immigrant and native groups. The results show that labor supply behaviors differ significantly across the groups.

Obviously, family membership and its obligations have important effects on married women's labor supply. The results show that there are significant and different effects of control variables on women's labor supply among AI women, AN women, ON women and OI women. The fertility effects are very strong. All women will decrease their work hours with one or more children in the household and ON women having children under age 5 in the household usually decrease more work hours than AN women and Asian first-generation women. More importantly, I find that in households with children, having more than two adults rather than themselves or their spouses, AI women and AN women spend much more time in market work than ON women. This means that more than two adults in the household with children are positively and significantly associated with married AI women and AN women's labor supply behaviors. Extra adults in the household share in the division of labor in the family so that AI women and AN women can focus on the work out of home rather than unpaid housework. In this paper, since I do not control for earnings of other adults in the household, women's labor supply behaviors may be explained by other earnings by household members who are not the spouse.

Additionally, married AI women have significantly different labor supply behavior from married ON women and AN women. Unlike ON and AN women, AI women have lower employment rates even though they have lower divorce rate but higher education attainment. Usually, they are less responsive to hourly wage and spouse's hourly wages than AN women and ON women. In other words, their own wages and spouse wages do not affect their labor supply

behaviors as much as AN women's and ON women's. Moreover, their country of origin has a differential effect on their labor supply behaviors. Japan, Korea, and India's women's labor supply indicates that married women from male-dominated society work fewer hours than other Asian immigrant women, because in the male-dominated society, women conform to gendered care-taking roles.

2.7 Data Appendix

Data were obtained from 2006 – 2011 American Community Survey (ACS) one-year estimates. All nominal earnings and income variables were converted into 1999 dollars using the Personal Consumption Expenditures price index from the National Income and Product Market Accounts (see http://www.bea.gov). All top-coded value of total wage and salary earnings were multiplied by correction factor 1.45 used by Blau and Kahn (2007).

Hourly wage observations are considered as invalid if they are less than $2 or greater than $200 per hour in 1999 dollars. For non-workers, the self-employed and those with invalid wage observations, wages are imputed using a regression approach that proposed by Juhn(1992), Juhn and Murphy (1997) and Balu and Kahn (2007). Non-workers receive predicted wages based on the regression using the working 1-13 weeks per year sample. The other categories of worker, including the self-employed and these with invalid wage observations, were imputed hourly wages using the regression corresponding to the weeks they worked. The separate log wage regression is run for single women and married women by weeks worked cells. The regressors used were own and spouse (if married) variables for age, age squared, three education categories, and three race/Hispanic categories, plus eight region categories and a metropolitan area indicator.

Table 2-14 Mean for Non-workers and Those Working Less 13 Weeks, Single/Married Women Ages 25-54.

	Impute Comparison (Single)		
	Non-Workers	Less than 13 Weeks	Differences (0)-(1)
Age	41.09	38.62	2.48
Number of own children in the household	0.77	0.81	-0.04
Less than grade 12	0.21	0.10	0.11
Grade 12	0.46	0.40	0.06
Some college	0.30	0.43	-0.13
College graduate	0.03	0.07	-0.04
	Impute Comparison (Married)		
	Non-Workers	Less than 13 Weeks	Differences (0)-(1)
Age	40.35	39.71	0.65
Number of own children in the household	1.86	1.75	0.11
Number of own children under age 5 in the household	0.46	0.39	0.07
Less than grade 12	0.08	0.04	0.04
Grade 12	0.35	0.30	0.05
Some college	0.48	0.55	-0.07
College graduate	0.08	0.11	-0.02
Spouse age	42.15	41.43	0.72
Spouse less than grade 12	0.08	0.06	0.02
Spouse grade 12	0.32	0.32	0.01
Spouse some college	0.43	0.46	-0.04
Spouse college graduate	0.16	0.16	0.01

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3. THE ALLOCATION OF TIME WITH CHILDREN AMONG ALL IMMIGRANT WOMEN

3.1 Introduction

As everyone who has a child quickly discovers, children are an extremely expensive commodity during one's lifetime. The investment in children, such as time, money and effort, is unlimited and continuous. Particularly, time investment is thought to be very important to children's development.

Becker (1965) presented a theory of the allocation of time by adding time use in the production of household utility. In Becker's model there are two constraints: the budget constraint for goods and another one for time. The rational individual maximizes her utility subject to a time constraint and a budget constraint by choosing the optimal prices of goods and amount of time to spend in each activity during a day. Becker (1991), in "A Treatise on the Family", stated that the time parents spend with their children and other financial and material resources can be seen as investments into the production of child quality. Moreover, he presented specialization in a multi-person households and concluded that "if all members of an efficient household have different comparative advantages, no more than one member would allocate time to both the market and household sectors."

In "The Socioeconomic Attainments of Asian Americans", Sakamoto, Goyette and Kim (2004) concluded that Asian Americans have higher mean values on most indicators of socioeconomic status than non-Hispanic whites, such as educational achievements and labor market. Moreover, the determinants of the higher education participation and success have been discussed by several scholars and researchers. By using diaries from the Longitudinal Study of

Australian Children, Fiorini and Keane (2012) pointed out that time spent in educational activities, particularly with parents, is the most productive inputs for cognitive skill development. Chiswick and DebBurman (2003) concluded that second-generation immigrant American adults have the highest level of schooling, exceeding that of the foreign born and of the native born with native-born parents. It has been shown that the time allocation of women with children affects children's educational attainments. The allocation of time with children plays an important role in the development of human capital and the subsequent socioeconomic status that will be transmitted from generation to generation. Thus, this paper will examine the different time allocations between immigrant and native women with their children and explore the difference on various kinds of child care, including total child care, educational child care, recreational child care and travel child care.

As more and more women work outside the home, it is very natural that the question of the different time spent with children by working and non-working women is examined by researchers. For a typical weekday, a working woman with children may spend time on working, sleeping, doing housework, leisure, and child care and so on; a non-working woman with children may involve all the same activities except market work.

Researchers predict that at the current pace, by the year 2040 one in three children will grow up in a household with at least one foreign-born parent (Suarez-Orozco et al., 2008). I focus on all immigrant women in this research. Firstly, this paper will examine immigrant parents' time allocated to the care of their children by subgroups (working/non-working, years of schooling), compared with native women. Also, I focus on the different time allocation with children between immigrant working mothers and non-working mothers. Finally, this paper will

explore the different time allocation between immigrant and native women among all time use categories.

3.2 Literature

There are many articles trying to examine the allocation of time with children by different groups. In general, a parent's level of education affects how much time he or she will spend with their children. Using data from American Time Use Surveys 2003-2006, Guryan, Hurst and Kearney (2008) concluded that higher-educated parents spent more time with their children, and also spent more time working outside the home than lower-educated parents. Early time diary studies showed that more highly educated mothers not only spent more time on average with children, but they also tended to do more intellectually stimulating things with their children (Leibowitz, 1977; Hill & Stafford, 1974). For the different birth order, Price (2006) concluded that a first-born children received 20-30 more minutes of quality time each day with his or her parent than a second-born child of the same age from a similar family.

Time use data from European countries showed similar patterns of increases in parental time in primary child care across a number of developed countries (Gauthier, Smeeding, and Furstenberg, 2004). The authors documented a notable increase in time spent in child care for all subsamples considered: working/nonworking mothers, working/nonworking father.

In terms of working and non-working women, even though many researchers have shown that employed parents spent less time with their children than non-employed parents, when researchers compared working parents with non-working parents who have school-aged children (not present in the home often), the results indicated that non-working parent did not spend significantly more time with their children than working parents (Bianchi, 2000; Zick and Bryant,

1996; Gauthier, Smeeding, and Furstenberg, 2004; Sayer, Bianchi, and Robison, 2004). Stewart (2010) focused on pre-school-aged children. By using a two stages timing model, he figured out that both full-time and part-time employed mothers shifted enriching childcare time from workdays to non-workdays. On workdays, full-time employed mothers shifted enriching childcare time to evenings, but part-time employed mothers shifted childcare time very little.

Moreover, the allocation of time has changed. Aguiar and Hurst (2007) found that both women and men had a dramatic increase in leisure time lies behind the relatively stable number of market hours worked between 1965 and 2003. This was driven by a decline in home production work hours. From 1993 to 2003, the increase in childcare was over five hours per week, conditional on having a child in the household. It is interesting that as mothers increased market work they reduced their time in housework but not childcare (Bianchi, Robinson, and Milkie, 2006).

Even though there is some research on women's time allocation with their children, very few papers focus on immigrant women's time allocation with their children. In this research, I will examine immigrant women's time allocation with their children and their daily time use. In the next section, I will describe data and method that are used to compare immigrant and native women's time allocation with their children. Then, I will present the results and conclusions.

3.3 Data and Method

The 2005-2011 American Time Use Surveys (ATUS) is used for the analysis. The American Time Use Surveys (ATUS), which is reported by the U.S. Bureau of Labor Statistics, is a continuous survey about how individuals age 15 and over spend their time doing various

activities, such as work, childcare, housework, watching television, volunteering, and socializing. ATUS data files can be linked to data files from the Current Population Survey (CPS), so it offers us more information about each individual.

The primary analysis sample includes only those women between the ages of 21 and 55 with at least one child under age 18 and only those who had a completed 24-hour time diary. Since this paper focuses on all immigrant women and compares the different time allocation between immigrant and native women with their children, the sample only includes immigrant and native women. Immigrant women are the women who were not born in the United States, but are living in the United States now; native women refer to the women who were born in the United States. In the sample, there are totally 16,251 women with children, including 13,429 native women and 2,822 immigrant women. Also, there are 9,557 working native women and 1,576 working immigrant women; 3,872 non-working native women and 1,246 non-working immigrant women in the sample.

To analyze immigrant women's time allocation with their children, this paper defines "total child care" as the sum of four primary time use components. It includes "Basic child care", "Educational child care", "Recreational child care", and "Travel child care". "Basic child care" is time spent on the basic needs of children, including breast-feeding, rocking a child to sleep, feeding, changing diapers, providing medical care to child, grooming child, and so on. However, time spent preparing a child's food/meal is included in general "food preparation", a component of core nonmarket work. "Educational child care" is time spent reading to children, teaching children, helping children with homework, attending meetings at a child's school, and so on. "Recreational child care" involves playing games with children, playing outdoors with children, attending a child's sporting event or dance recital, going to the zoo with children, taking walks

with children. “Travel child care” is time spent on any travel related to any of the three other categories of child care, such as driving a child to school, to a doctor, and to dance practice. “Total child care” is the sum of all these four subcategories.

This paper also tests the different time allocations of immigrant and native women in general. It defines “Total child care”, “Total market work”, “Total nonmarket work”, “Leisure” and “Other”. Again, “Total child care” is the sum of all these four subcategories. “Total market work” includes core market work (such as work for paid main job and other job), plus other work related activities, searching for a job and applying for unemployment benefits and so on. “Total nonmarket work” contains core nonmarket work (such as food preparation, food presentation, kitchen/food cleanup, washing/drying cloths, ironing, dusting, vacuuming, indoor cleaning, indoor painting), plus shopping/obtaining goods and services (including grocery shopping, shopping for other goods, comparison shopping, clipping coupons, going to bank, going to post office, meeting with lawyer, going to veterinarian and so on) and other home production (such as vehicle repair, outdoor repair, outdoor painting, yard work, pet care, and gardening). But this category excludes any time spent acquiring medical care. For “Leisure” measures, Leisure Measure 2 is used in this paper, which is defined by Aguiar and Hurst (Aguiar and Hurst, 2007). It sums together all time spent on entertainment/social activities/relaxing and active recreation described in Appendix Table 2-5, as well as time spent sleeping, eating, and on personal care. Medical care is excluded in this category. Finally, the rest of activities are sorted into “Others” measures. Appendix Table 2-5 shows more details related to each subcategory.

In this paper, the dependent variable is the total women’s time spent with their children. Because I examine women’s time allocation with their children on basic child care, educational child care, recreational child care and travel child care as well, other dependent variables are

defined accordingly. For example, mothers spend time with children on physical care, education-related activities, reading, talking, playing/doing hobbies, looking after children, attending children's events, travel and other childcare activities daily. Also, some independent variables are applied to test women's time allocation with children. For example, one of the main independent variables is the mother's educational attainment, which has four categories: less than high school, high school, some college, and college degree or more. The independent variables also include hourly wages (if working), mother's age, number of child in the household, years in the United States (for immigrants) and dummy variables such as whether mother is a native woman or an immigrant woman.

Because this paper is trying to examine the mother's time spent with children and compare the difference between immigrant and native women within different subcategories, there is more than one dependent variable to be analyzed simultaneously. So, multivariate analysis is used in this paper, and the following equation will be estimated:

$$T_i = \alpha + \beta * X_i + \gamma * Z_i + \delta * D_i + \varepsilon_i \quad (3.1)$$

Where T_i, the dependent variable, is the mother i's time spent with her children by hours for different specific activities including total child care, basic child care, educational child care, recreational child care and travel child care. X_i represents the dummy variable indicating the mother i's educational attainment. Z_i represents other independent variables, such as hourly wages (if working), mother i's age, mother i's age squared, mother i's age cube, the number of children in the mother i's household, if the youngest children is under age 5, mother i's marital status, mother i's races, years in the United States, the day of week dummies, the month of year dummies and survey year dummies. D_i is a dummy variable indicating whether mother is an immigrant or native woman. ε_i is the error term of this equation.

Using the specification (3.1), I can figure out the mother's time spent with their children on each specific activity by controlling for the different educational attainment. Also, it tests immigrant and native women's different time allocation with their children by controlling for the immigrant women dummy variable. Furthermore, I separate mothers into two groups by their working status, either working or not working. In this way, the results will show me the differences in time spent on childcare between working mothers and non-working mothers. The women with employed status will be considered as working women; those with unemployed or not in labor force status will be considered as non-working women. Although some non-working women may get some hours on total market work category, because their activities, such as searching for a job and applying for unemployment benefits, are sorted into total market work category, those women are considered as non-working women.

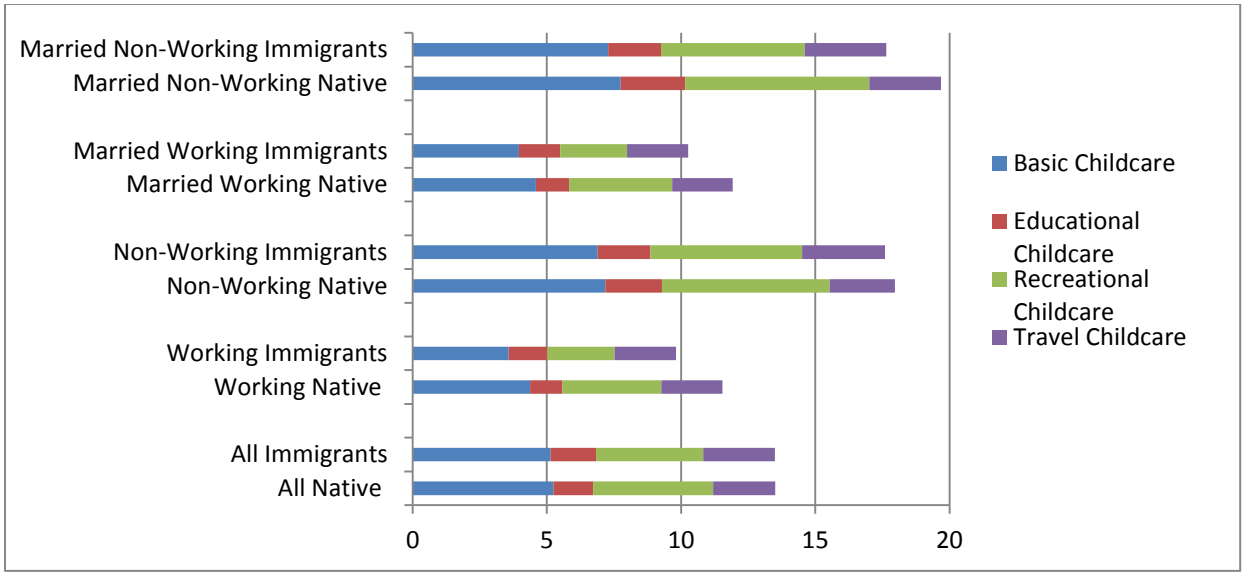
Additionally, the specification (3.1) is used to explore working and non-working women's time use categories, including total market work, total nonmarket work, total childcare, total leisure and others. Similar to the previous estimation, multivariate analysis is used to test the different time use in each category between native women and immigrant women.

The results will help us understand the differences between native and immigrant women in the allocation of time to care their children. Moreover, I expect that working mothers with the limited and less time will spend their time on different activities from non-working mothers.

3.4 Results

To compare women's hours spent in childcare between various subgroups, the data is separated into different groups including immigrant/native, working/non-working and marital status. Table 3-1 shows the percentage of the women's time allocation with their child through

basic child care, educational child care, recreational child care and travel child care. In general, native women spent slightly more time with their children in total and it is true for both working and non-working. However, on average, working immigrant women spend 1.44 hours, about 15 percent of total childcare, on educational childcare, which is 0.24 hours more than working native women. On average, married working native women spend 1.24 hours per week on educational child care and married working immigrant women spend 1.54 hours per week on educational child care. Both married non-working native and immigrant women spend more time on educational child care than the related working women. In terms of each subgroup, native women spend more time on recreational child care on average than immigrant women by number and percentage, but spend less time on travel child care than immigrant women on average.

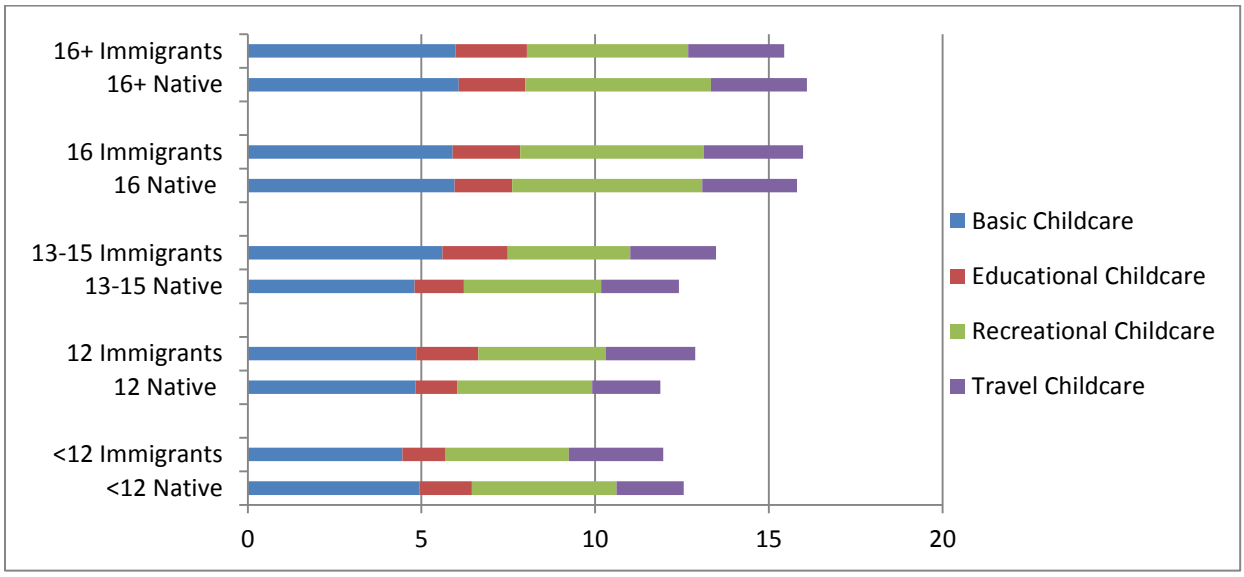


Source: 2006-2011 American Time Use Surveys. Samples include all individuals between the ages of 21 and 55who had time diaries summing to a complete day and at least one child under the age of 18.

Figure 3-1 Women's Hours Spent in Childcare by Various Subgroups.

Parents with different education levels spent substantially different amount of time in child care. Figure 3-2 reports that both immigrant and native women with less education level spend less time on total child care. With higher education level, immigrant women increase time spent

on educational child care to 2.06 hours per week on average and native women show an increase to 1.92 hours per week as well. Time spent on recreational child care does not show a dramatic increase for both groups of women. Even though the percentage does not show a continuous increase as education levels go higher, the amount of time spent on educational childcare increases with higher education levels of mothers. In sum, the allocation of time on educational childcare is driven by mothers' educational levels.

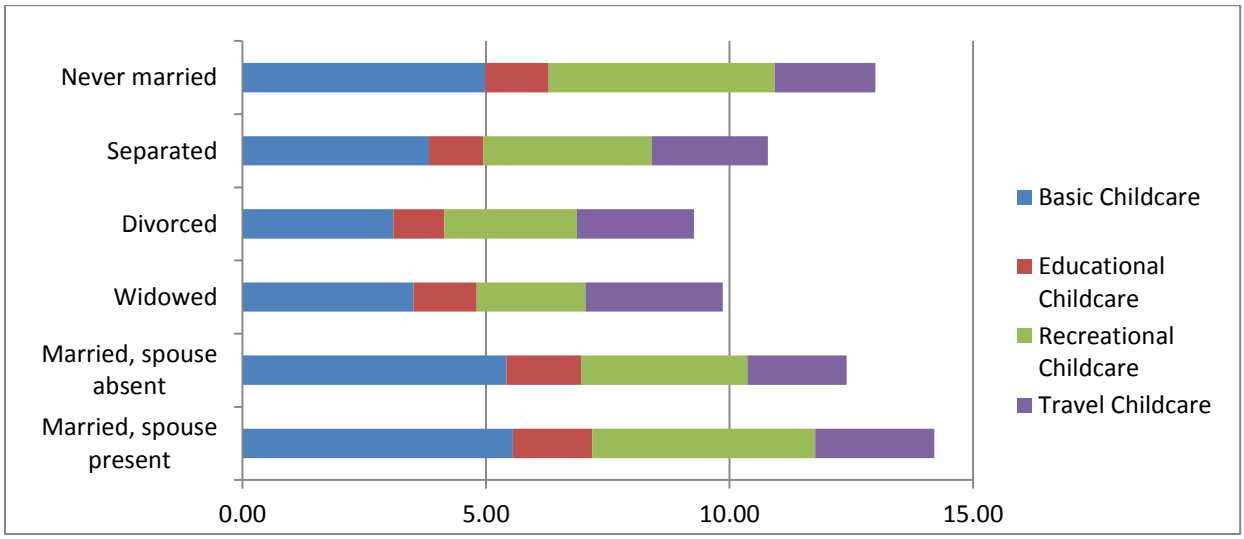


Source: 2006-2011 American Time Use Surveys. Samples include all individuals between the ages of 21 and 55 who had time diaries summing to a complete day and at least one child under the age of 18.

Figure 3-2 Women's Hours Spent in Childcare by Educational Attainment.

Figure 3-3 shows the different women's time spent on childcare by marital status. It is obvious that married women with spouse present in the household spend significantly more hours with their children in various childcare categories than women who are never married, widowed, divorced and separated. They spent more time on basic child care, and educational child care than other groups of women. Never married women with children in the household spent slightly less hours on total child care than married women with spouse present in the

household but more hours on total child care than other groups of women. Widowed, divorced and separated women spend less time with their children.



Source: 2006-2011 American Time Use Surveys. Samples include all individuals between the ages of 21 and 55 who had time diaries summing to a complete day and at least one child under the age of 18.

Figure 3-3 Women's Hours Spent in Childcare by Marital Status.

In term of working and non-working women's time allocation with their children, the results are very interesting. Table 3-1 and Table 3-2 present the multivariate OLS regressions results of non-working women's time allocation with their children and working women's time allocation with their children separately. In Table 3-1, it shows that married non-working women spent more hours on total child care, basic child care and educational child care than other non-working women. Holding all else constant, with one more child under age 18 in the household, non-working women will spend 0.616 hours[12] more on educational child care per week, 0.805 hours more on basic child care per week, and 0.498 hours more on travel child care per week, but 0.379 hours less on recreational child care per week. More importantly, the results show that non-working immigrant women do spend more hours on total child care and basic child care than

[12] The surveys are reported in units of "minutes per day". I converted the minute-per-day reports to "hours per week" by multiplying 7/60.

non-working native women, however, the more years they are in the United States, the fewer hours they will spend on basic child care and educational child care. Working women's time allocation with children is slightly different from non-working women shown in Table 3-2. Obviously, working women's time allocation with their children is negatively affected by their hourly wages. The higher hourly wages, the less hours they spent on child care. Similar to non-working women, with one more child under age 18 in the household, working women will spend 0.264 hours more on educational child care. Different from non-working women, working immigrant women spend 0.495 hours more on educational child care than working native women. There is no evidence that years in the United States will affect working immigrant women's time allocation with their children. For both working and non-working women, the results document that women's education level affects their time allocation with children positively, especially educational child care.

Table 3-1 Multivariate OLS Regressions of Non-Working Women's Time Allocation with Children.

	Total Child Care	Basic Child Care	Educational Child Care	Recreational Child Care	Travel Child Care
Married	2.400**	1.214**	0.539**	0.404	0.241
	(0.554)	(0.354)	(0.175)	(0.340)	(0.167)
The youngest child is under age 5	9.063**	4.848**	-0.746**	4.952**	0.008
	(0.533)	(0.341)	(0.168)	(0.328)	(0.160)
Number of household children < 18	1.540**	0.805**	0.616**	-0.379**	0.498**
	(0.199)	(0.127)	(0.063)	(0.122)	(0.060)
Race: (White omitted)					
Black, non-Hispanic only	-4.241**	-0.756	-0.095	-3.122**	-0.267
	(0.727)	(0.465)	(0.230)	(0.447)	(0.219)
Asian, non-Hispanic only	-0.492	0.539	-0.222	-1.451	0.642
	(3.605)	(2.307)	(1.140)	(2.217)	(1.087)
American Indian, native Hawaiian and multiple races	-1.135	-0.474	-0.623	0.157	-0.194
	(1.487)	(0.951)	(0.470)	(0.914)	(0.448)
Hispanic	-3.172**	-0.179	-0.153	-2.901**	0.062
	(0.817)	(0.523)	(0.258)	(0.502)	(0.246)
Asian immigrants	-1.410	-0.431	0.930	-0.908	-1.001
	(3.868)	(2.475)	(1.223)	(2.378)	(1.166)
Hispanic immigrants	-3.277*	-1.803*	-0.256	-1.422	0.204
	(1.346)	(0.861)	(0.425)	(0.827)	(0.405)
Immigrants to U.S.	5.484**	2.164*	0.810	1.665	0.843
	(1.560)	(0.998)	(0.493)	(0.959)	(0.470)
Immigrant's year of entry into the U.S.	-0.220**	-0.128*	-0.061*	-0.001	-0.028
	(0.081)	(0.052)	(0.025)	(0.050)	(0.024)
Education Attainment: (less than 12 years of schooling omitted)					
A high school diploma or GED equivalent	0.608	0.524	0.225	-0.336	0.195
	(0.644)	(0.412)	(0.204)	(0.396)	(0.194)
Some college	0.855	0.479	0.538*	-0.342	0.180
	(0.696)	(0.445)	(0.220)	(0.428)	(0.209)
A college degree	5.847**	2.185**	0.559*	1.995**	1.106**
	(0.771)	(0.493)	(0.244)	(0.474)	(0.232)
Graduate education	5.337**	1.802**	1.595**	1.204	0.735*
	(1.053)	(0.674)	(0.333)	(0.647)	(0.317)

Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups.
* Denotes significance at 5%. ** Denotes significance at 1%.

Table 3-2 Multivariate OLS Regressions of Working Women's Time Allocation with Children.

	Total Child Care	Basic Child Care	Educational Child Care	Recreational Child Care	Travel Child Care
Log hourly wages	-0.693**	-0.389**	-0.098**	-0.178**	-0.027
	(0.108)	(0.065)	(0.028)	(0.061)	(0.035)
Married	-0.012	0.498**	-0.041	-0.091	-0.377**
	(0.293)	(0.176)	(0.077)	(0.167	(0.095)
The youngest child is under age 5	6.547**	3.213**	-0.118	2.710**	0.741*
	(0.306)	(0.183)	(0.080)	(0.174)	(0.099)
Number of household children < 18	1.284*	0.795**	0.264**	-0.059	0.283**
	(0.140)	(0.084)	(0.037)	(0.080)	(0.045)
Race: (White omitted)					
Black, non-Hispanic only	-2.293**	-0.473*	-0.080	-1.637**	-0.102
	(0.377)	(0.226)	(0.099)	(0.215)	(0.122)
Asian, non-Hispanic only	0.273	0.600	0.614	-0.807	-0.134
	(1.271)	(0.763)	(0.334)	(0.725)	(0.412)
American Indian, native	-1.570	-0.714	-0.096	-0.446	-0.312
Hawaiian and multiple races	(0.947)	(0.568)	(0.249)	(0.540)	(0.307)
Hispanic	-1.502**	-0.746**	-0.082*	-1.218	0.544**
	(0.482)	(0.289)	(0.127)	(0.275)	(0.156)
Asian immigrants	-2.264	-1.389	-0.420	-0.523	0.069
	(1.526)	(0.916)	(0.401)	(0.870)	(0.495)
Hispanic immigrants	-2.075	-1.090	-0.459*	-0.266	-0.258
	(0.868)	(0.521)	(0.228)	(0.495)	(0.281)
Immigrants to U.S.	1.152*	0.949*	0.495*	-0.496	0.204
	(0.937)	(0.562)	(0.246)	(0.534)	(0.304)
Immigrant's year of entry into the U.S.	-0.037	-0.053	0.006	0.025	-0.016
	(0.055)	(0.033)	(0.014)	(0.031)	(0.017)
Education Attainment: (less than 12 years of schooling omitted)					
A high school diploma or	0.877	0.719*	0.127	-0.026	0.056
GED equivalent	(0.547)	(0.326)	(0.143)	(0.310)	(0.176)
Some college	2.038**	1.170**	0.220	0.242	0.405*
	(0.545)	(0.327)	(0.143)	(0.310)	(0.176)
A college degree	4.259**	1.981**	0.443**	1.158**	0.675**
	(0.571)	(0.342)	(0.150)	(0.325)	(0.185)
Graduate education	5.999**	2.888**	0.560**	1.645**	0.904**
	(0.633)	(0.380)	(0.166)	(0.361)	(0.205)

Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups.
* Denotes significance at 5%. ** Denotes significance at 1%.

In this paper, Oaxaca decomposition approach is used to measure the unexplained gap in the means of the women's time allocation between immigrant women and native women. For married non-working women, 61% of the gap in total child care between immigrant women and native women is explained by the differences in covariates and the other 39% is due to the differences in coefficients; also, 59% of gap in educational child care between immigrant women and native women is contributed by the difference in covariates and the other 41% is due to the differences in coefficients. For married working women, 54% of covariates effect and 46% of coefficient effect together account for the gap in total child care between immigrant women and native women; meanwhile, the differences in covariates explain almost 96% of the gap in educational child care between immigrant women and native women.

Moreover, from Table 3-1 and Table 3-2, the results show that, for both working and non-working women, education attainments have an important effect on their time allocation with children. The women with college degree or graduate education are more likely to spend more time on total child care than the ones with only less than 12 years of schooling. In order to test the women's time allocation by different education attainments, we separate women into two education attainment groups: lower education and higher education. In the lower education group, including women who have high school diploma or GED equivalent education level or less than 12 years of schooling. In the higher education group, it includes all of the women who have some college, or a college degree, or graduate education. Table 3-3 shows the multivariate OLS regressions of non-working women's time allocation with children by both lower and higher education. In general, the results show that non-working women with children under age 5 will spend more time on total child care, basic child care and recreational child care but less time on educational child care. It also shows that higher educated women spend more hours on total child

care, basic child care and recreational child care then lower educated women if their youngest child is under age 5. With one more child under age 18 in the household, lower educated women only increase 0.248 hours per week on educational child care; however, under the same situation, higher educated women will increase about 1.015 hours per week on educational child care. The results show that lower educated immigrant women will spend 1.400 hours more on educational child care than lower educated native women. For non-working women, higher educated women show significantly different time allocation with their children from lower educated women. Table 3-4 shows the multivariate OLS regressions of working women's time allocation with children by both lower and higher education. If there is one more unit increase in log hourly wage, lower educated women will decrease 0.566 hours per week spent on total child care; compared with 0.467 hours decrease of higher educated women. The change in hourly wage does not affect higher educated women's time allocation with children as much as lower educated women's. For working women, with the youngest child under age 5, higher educated women will spend more hours on total child care than lower educated women. Moreover, with one more child under age 18 in the household, higher educated women will spend 0.267 hours more on educational child care, and lower educated women only spend 0.195 hours more on educational child care. Educational child care is affected by women's educational level whether they are immigrants or natives. Obviously, lower educated immigrant women spend more time on educational child care than lower educated native women. But, for working women, the results do not show any significant difference in time allocations on educational child care between higher educated immigrant women and native women.

Figure 3-4 and Figure 3-5 how women's hours spent in different time use categories by various subgroups. The time use categories include total childcare time, total market work time,

Table 3-3 Multivariate OLS Regressions of Non-Working Women's Time Allocation with Children by Lower/Higher Education.

	Lower Education					Higher Education				
	Total Child Care	**Basic Child Care**	**Educational Child Care**	**Recreational Child Care**	**Travel Child Care**	**Total Child Care**	**Basic Child Care**	**Educational Child Care**	**Recreational Child Care**	**Travel Child Care**
Married	2.419**	1.619**	0.584**	-0.090	0.305	3.811**	1.185*	0.585*	1.600**	0.431
	(0.752)	(0.489)	(0.213)	(0.458)	(0.229)	(0.838)	(0.522)	(0.282)	(0.515)	(0.247)
The youngest child is under age 5	7.679**	4.156**	-0.409	3.753**	0.179	10.915**	5.692**	-0.921**	6.073**	0.070
	(0.795)	(0.516)	(0.225)	(0.484)	(0.242)	(0.735)	(0.458)	(0.247)	(0.452)	(0.217)
Number of household children < 18	1.493**	0.684**	0.248**	0.160	0.400**	1.501**	1.020**	1.015**	-1.061**	0.526**
	(0.289)	(0.188)	(0.082)	(0.176)	(0.088)	(0.289)	(0.180)	(0.097)	(0.177)	(0.085)
Race: (White omitted)										
Black, non-Hispanic only	-4.485**	-0.265	-0.055	-3.662**	-0.501	-4.407**	-1.557*	0.035	-2.879**	-0.005
	(1.079)	(0.702)	(0.306)	(0.657)	(0.328)	(1.011)	(0.630)	(0.340)	(0.622)	(0.299)
Asian, non-Hispanic only	-5.950	-8.102	-1.240	5.085	-1.691	0.457	2.818	0.152	-3.983	1.469
	(8.127)	(5.284)	(2.304)	(4.948)	(2.475)	(3.953)	(2.465)	(1.331)	(2.432)	(1.169)
American Indian, native Hawaiian and multiple races	-0.420	0.680	-0.147	-0.005	-0.948	-3.048	-2.032	-1.015	-0.381	0.380
	(2.324)	(1.511)	(0.659)	(1.415)	(0.708)	(1.949)	(1.215)	(0.656)	(1.199)	(0.576)
Hispanic	-3.958**	-0.936	0.039	-3.000**	-0.061	-1.998	0.844	-0.304	-2.953**	0.414
	(1.088)	(0.707)	(0.308)	(0.662)	(0.331)	(1.335)	(0.832)	(0.449)	(0.821)	(0.395)
Asian immigrants	3.533	7.693	0.533	-5.957	1.263	-1.489	-2.066	1.398	1.290	-2.112
	(8.597)	(5.590)	(2.437)	(5.235)	(2.619)	(4.272)	(2.663)	(1.438)	(2.628)	(1.263)
Hispanic immigrants	-3.184	-2.100	-0.434	-1.995	1.345*	-5.815**	-2.490	-0.161	-1.644	-1.519*
	(2.042)	(1.327)	(0.579)	(1.243)	(0.622)	(2.103)	(1.311)	(0.708)	(1.294)	(0.622)
Immigrants to U.S.	6.729**	2.357	1.400*	2.541	0.429	2.610	2.045	-0.248	0.458	0.355
	(2.329)	(1.514)	(0.660)	(1.418)	(0.709)	(2.337)	(1.457)	(0.787)	(1.438)	(0.691)
Immigrant's year of entry into the U.S.	-0.245*	-0.083	-0.095**	0.006	-0.073*	-0.045	-0.143	0.001	0.038	0.058
	(0.106)	(0.069)	(0.030)	(0.065)	(0.032)	(0.136)	(0.085)	(0.046)	(0.084)	(0.040)

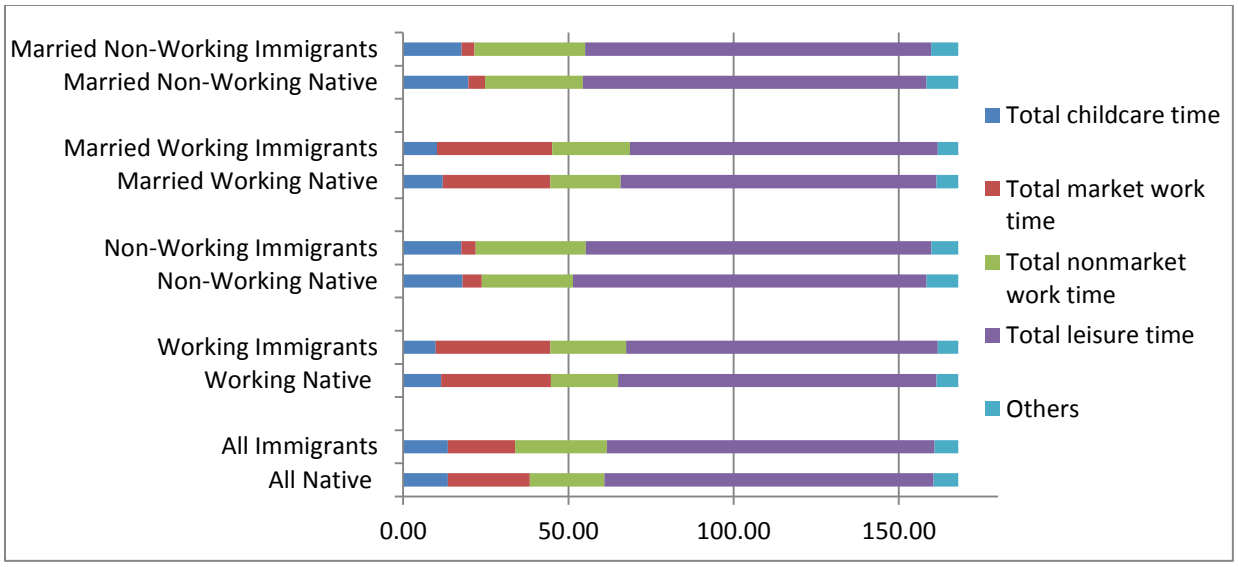
Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups. Lower education includes high school graduates (or GED equivalent) or less; higher education includes some college, college degree, and graduate education. * Denotes significance at 5%. ** Denotes significance at 1%.

Table 3-4 Multivariate OLS Regressions of Working Women's Time Allocation with Children by Lower/Higher Education.

	Lower Education					Higher Education				
	Total Child Care	**Basic Child Care**	**Educational Child Care**	**Recreational Child Care**	**Travel Child Care**	**Total Child Care**	**Basic Child Care**	**Educational Child Care**	**Recreational Child Care**	**Travel Child Care**
Log hourly wages	-0.566**	-0.175	-0.168**	-0.269*	0.046	-0.467**	-0.339**	-0.057	-0.054	-0.016
	(0.218)	(0.127)	(0.058)	(0.119)	(0.073)	(0.123)	(0.074)	(0.032)	(0.071)	(0.039)
Married	-0.805	0.130	-0.103	-0.769**	-0.063	0.812*	0.870**	0.031	0.422	-0.511**
	(0.464)	(0.271)	(0.124)	(0.253)	(0.157)	(0.375)	(0.226)	(0.097)	(0.216)	(0.119)
The youngest child is under age 5	4.508**	2.224**	-0.165	1.541**	0.907**	8.163**	3.902**	0.029	3.393**	0.838**
	(0.544)	(0.318)	(0.145)	(0.297)	(0.184)	(0.370)	(0.223)	(0.096)	(0.213)	(0.117)
Number of household children < 18	0.865**	0.675**	0.195**	0.058	-0.063	1.549**	0.918**	0.267**	-0.090	0.453**
	(0.232)	(0.135)	(0.062)	(0.126)	(0.078)	(0.180)	(0.109)	(0.047)	(0.104)	(0.057)
Race: (White omitted)										
Black, non-Hispanic only	-1.722**	-0.244	-0.276	-1.200**	-0.001*	-2.789**	-0.717*	0.006	-1.955**	-0.123
	(0.630)	(0.368)	(0.168)	(0.343)	(0.213)	(0.472)	(0.285)	(0.122)	(0.272)	(0.150)
Asian, non-Hispanic only	0.489	-2.556	4.326**	0.521	-1.801	0.014	1.394	-0.456	-1.212	0.289
	(2.715)	(1.586)	(0.727)	(1.481)	(0.916)	(1.447)	(0.875)	(0.376)	(0.834)	(0.460)
American Indian, native Hawaiian and multiple races	-0.320	-1.166	0.332	0.330	0.183**	-2.048	-0.545	-0.216	-0.802	-0.484
	(1.644)	(0.960)	(0.440)	(0.896)	(0.556)	(1.164)	(0.704)	(0.302)	(0.671)	(0.369)
Hispanic	-0.891	-0.997*	-0.283	-0.535	0.925**	-2.302*	-0.799*	-0.002	-1.740**	0.240
	(0.744)	(0.434)	(0.199)	(0.406)	(0.251)	(0.630)	(0.380)	(0.163)	(0.363)	(0.200)
Asian immigrants	0.684	0.092	-3.885	0.723	3.754	-2.386	-1.669	0.716	-0.649	-0.787
	(3.260)	(1.904)	(0.873)	(1.778)	(1.102)	(1.739)	(1.052)	(0.452)	(1.003)	(0.552)
Hispanic immigrants	-2.050	-0.813	-1.198	-0.104	0.063	-2.541*	-1.475*	-0.061	-0.278	-0.725
	(1.397)	(0.816)	(0.374)	(0.762)	(0.472)	(1.217)	(0.735)	(0.316)	(0.701)	(0.386)
Immigrants to U.S.	1.436	1.373	1.614**	-1.156	-0.395	0.978	0.727	0.006	-0.348	0.593
	(1.604)	(0.937)	(0.429)	(0.875)	(0.542)	(1.175)	(0.710)	(0.305)	(0.677)	(0.373)
Immigrant's year of entry into the U.S.	-0.069	-0.097	-0.014	0.038	0.005	-0.013	-0.031	0.022	0.028	-0.033
	(0.087)	(0.051)	(0.023)	(0.047)	(0.029)	(0.071)	(0.043)	(0.018)	(0.041)	(0.022)

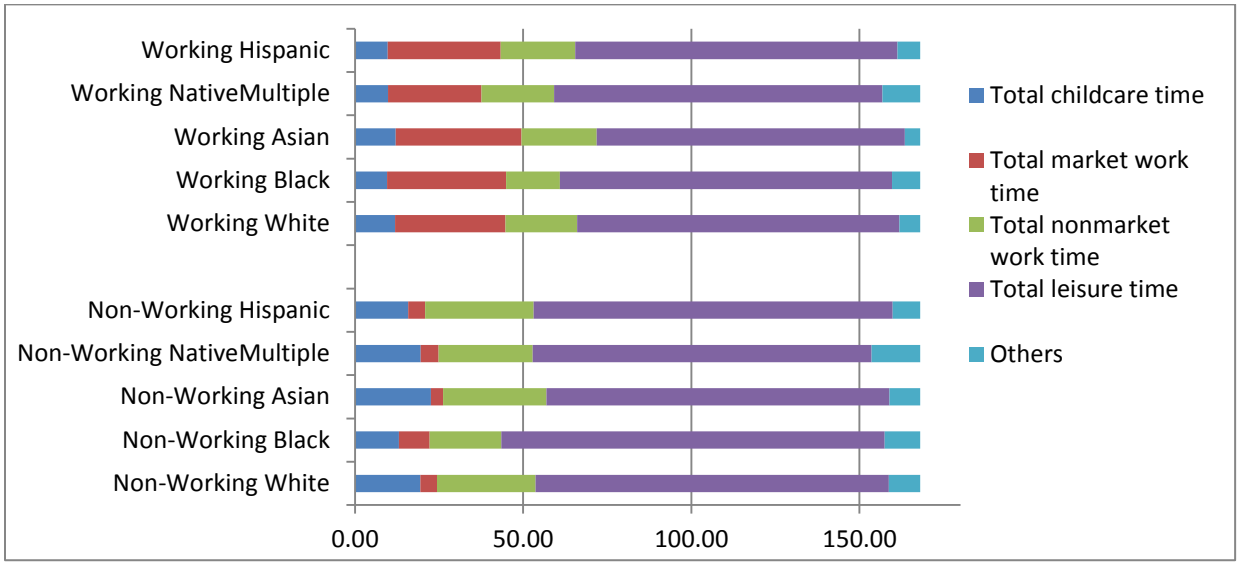
Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups. Lower education includes high school graduates (or GED equivalent) or less; higher education includes some college, college degree, and graduate education.* Denotes significance at 5%.** Denotes significance at 1%.

total nonmarket work time, total leisure time and others. Over all, Figure 3-4 shows that native women spend slightly more time on total childcare than immigrant women for each subgroup. Working immigrant women spend more time on total market work and total nonmarket work than working native women; however, they spend less time on leisure than working native women. On average, married working native women spend 32.56 hours per week on total market work, 21.28 hours per week on total nonmarket work and 95.65 hours per week on leisure; meanwhile, married working immigrant women spend 34.84 hours per week on total market work, 23.49 hours per week on total nonmarket work and only 93.14 hours per week on leisure. In Figure 3-5, it shows the different time use categories by races. Non-working Asian women spend more time on total childcare than any other race and black women spend less time on total childcare than other races. Asian working women spend more hours on total childcare than other races as well, and they also spend more time on total market work than any other races. Since they spend much time on childcare and market work and nonmarket work, it is not surprising to see that Asian women spend only 91.56 hours per week on leisure, which is about 4 to 9 hours less than women of other races.



Source: 2006-2011 American Time Use Surveys. Notice that non-working women, who are unemployed or not in labor force, may have a small amount of total market work time because total market work time includes time spent searching a job, applying the unemployment benefits and so on.

Figure 3-4 Women's Hours Spent in Different Time Use Categories by Various Subgroups.



Source: 2006-2011 American Time Use Surveys. Notice that non-working women, who are unemployed or not in labor force, may have a small amount of total market work time because total market work time includes time spent searching a job, applying the unemployment benefits and so on.

Figure 3-5 Women's Hours Spent in Different Time Use Categories by Races.

Furthermore, the multivariate OLS regressions show more interesting results for non-working women and working women's time use categories. There are five categories including total childcare time, total market work time, total nonmarket work time, total leisure time and other time. Firstly, in Table 3-5, the results show that non-working women's time use is affected by marriage. If non-working women are married, their total childcare time will increase 2.4 hours per week, total nonmarket work time will increase 4.192 hours per week and total leisure time will decrease 4.859 hours per week. It makes sense that a non-working mother spends more time with children and finishes most of housework daily but has less time to spend on leisure because of specialization in the household. Non-working immigrant women spend more time with their children but less time on leisure. With one more year in the United States they will spend 0.22 hours less per week on childcare. Table 3-6 shows the results of working women's time use by each subcategory. Working women's time use is closely associated with their hourly wage. Holding all else constant, given a one percent increase in hourly wages, working women will spend more hours on market work but less hours on childcare, nonmarket work and leisure. If working women's youngest children are under age 5, they will spend 6.547 hours more on childcare, 2.034 hours less on market work and 2.255 hours more on nonmarket work. Working immigrant women spend 5.392 hours more on market work and 5.373 hours less on leisure. Also, the results show that with higher education levels, working women will spend less hours on leisure.

Table 3-5 Multivariate OLS Regressions of Non-Working Women's Time Use Categories.

	Total childcare time	Total market work time	Total nonmarket work time	Total leisure time	Others
Married	2.400*	-1.673**	4.192**	-4.859**	-0.059
	(0.554)	(0.603)	(0.683)	(0.868)	(0.586)
the youngest child is under 5	9.063**	-0.683	-0.745	-5.518**	-2.116**
	(0.533)	(0.581)	(0.658)	(0.836)	(0.565)
Number of household children < 18	1.540**	-0.525*	1.160**	-2.897**	0.722**
	(0.199)	(0.217)	(0.246)	(0.312)	(0.211)
Race: (White omitted)					
Black, non-Hispanic only	-4.241**	3.626**	-5.919**	4.912**	1.622*
	(0.727)	(0.792)	(0.897)	(1.139)	(0.770)
Asian, non-Hispanic only	-0.492	-2.658	-6.291	10.858	-1.415
	(3.605)	(3.928)	(4.447)	(5.649)	(3.819)
American Indian, native	-1.135	-0.269	0.389	-4.423	5.438**
Hawaiian and multiple races	(1.487)	(1.620)	(1.834)	(2.330)	(1.575)
Hispanic	-3.172**	1.320	-1.094	1.593	1.354
	(0.817)	(0.890)	(1.008)	(1.280)	(0.865)
Asian immigrants	-1.410	3.010	5.854	-8.563	1.109
	(3.868)	(4.215)	(4.771)	(6.061)	(4.097)
Hispanic immigrants	-3.277*	0.734	2.508	2.493	-2.459
	(1.346)	(1.467)	(1.660)	(2.109)	(1.426)
Immigrants to U.S.	5.484**	-0.641	2.241	-7.245**	0.161
	(1.560)	(1.700)	(1.924)	(2.445)	(1.652)
Immigrant's year of entry into the U.S.	-0.220**	-0.087	0.067	0.207	0.032
	(0.081)	(0.089)	(0.101)	(0.128)	(0.086)
Education Attainment: (less than 12 years of schooling omitted)					
A high school diploma or GED equivalent	0.608	-0.838	0.291	-1.432	1.371*
	(0.644)	(0.702)	(0.795)	(1.010)	(0.683)
Some college	0.855	0.882	-0.229	-4.671**	3.163**
	(0.696)	(0.758)	(0.858)	(1.090)	(0.737)
A college degree	5.847**	0.656	-2.021*	-7.028**	2.545**
	(0.771)	(0.840)	(0.951)	(1.209)	(0.817)
Graduate education	5.337**	1.306	-2.175	-7.086**	2.617*
	(1.053)	(1.148)	(1.299)	(1.651)	(1.116)

Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups. Notice that non-working women, who are unemployed or not in labor force, may have a small amount of total market work time because total market work time includes time spent searching a job, applying the unemployment benefits and so on.

* Denotes significance at 5%. ** Denotes significance at 1%.

Table 3-6 Multivariate OLS Regressions of Working Women's Time Use Categories.

	Total childcare time	Total market work time	Total nonmarket work time	Total leisure time	Others
Log hourly wages	-0.693**	3.297**	-1.117**	-0.774**	-0.711**
	(0.108)	(0.249)	(0.159)	(0.203)	(0.113)
Married	-0.012	-2.034*	2.255**	-0.722	0.512
	(0.293)	(0.672)	(0.430)	(0.549)	(0.3053
The youngest child is under age 5	6.547**	-2.343**	-0.889*	-2.666**	-0.647*
	(0.306)	(0.701)	(0.449)	(0.573)	(0.318)
Number of household children < 18	1.284**	-0.222	0.580**	-1.997**	0.354
	(0.140)	(0.322)	(0.206)	(0.263)	(0.146)
Race: (White omitted)					
Black, non-Hispanic only	-2.293**	2.601**	-3.822**	1.179	2.334**
	(0.377)	(0.865)	(0.554)	(0.706)	(0.393)
Asian, non-Hispanic only	0.273	4.091	3.031	-5.019*	-2.37
	(1.271)	(2.913)	(1.865)	(2.379)	(1.322)
American Indian, native	-1.570	-1.141	1.900	0.314	0.497
Hawaiian and multiple races	(0.947)	(2.170)	(1.389)	(1.772)	(0.985)
Hispanic	-1.502**	2.293**	-0.810	-0.714	0.734
	(0.482)	(1.106)	(0.708)	(0.903)	(0.502)
Asian immigrants	-2.264	-3.878	-2.058	7.081*	1.120
	(1.526)	(3.497)	(2.238)	(2.856)	(1.587)
Hispanic immigrants	-2.075**	-2.520	3.110*	2.049	-0.564
	(0.868)	(1.990)	(1.273)	(1.625)	(0.903)
Immigrants to U.S.	1.152	5.392*	-0.207	-5.373**	-0.962
	(0.937)	(2.148)	(1.375)	(1.754)	(0.975)
Immigrant's year of entry into the U.S.	-0.037	-0.208	0.028	0.153	0.063
	(0.055)	(0.126)	(0.081)	(0.103)	(0.057)
Education Attainment: (less than 12 years of schooling omitted)					
A high school diploma or GED equivalent	0.877	-0.323	-0.001	-0.713	0.162
	(0.544)	(1.248)	(0.798)	(1.019)	(0.566)
Some college	2.038	-1.496	0.007	-1.908	1.358*
	(0.545)	(1.249)	(0.799)	(1.020)	(0.567)
A college degree	4.259	-1.839	-0.034	-3.673**	1.288*
	(0.571)	(1.308)	(0.837)	(1.068)	(0.594)
Graduate education	5.999	-2.066	0.244	-4.874**	0.696
	(0.633)	(1.452)	(0.929)	(1.185)	(0.659)

Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups.
* Denotes significance at 5%. ** Denotes significance at 1%.

Similarly to Table 3-3 and Table 3-4, Table 3-7 and Table 3-8 report the multivariate OLS regressions of non-working and working women's time use categories by both lower and higher

education, respectively. In Table 3-7, for non-working women, the results show that married lower educated women will spend 2.419 hours more on total childcare than non-married lower educated women, and 4.482 hours more on total nonmarket work. In contrast, married higher educated women will spend 3.811 hours more on total childcare than non-married higher educated women, and only 2.853 hours more on total nonmarket work. Marital status affects women's time use. More interesting, immigrant women with lower education will spend 15.330 hours less on total leisure time than native women with lower education. Table 3-8 shows the working women's time use categories. For working women, hourly wages have more of an effect on lower educated women's total childcare time than higher educated women's. With a one percent increase in hourly wages, lower educated women will spend 0.566 hours less on total childcare, and higher educated women will spend 0.467 hours less on total childcare. For working women, marriage is an important indicator as well. Married lower educated women will spend 3.098 hour more on total nonmarket work than non-married lower educated women; however, married higher educated women will only spend 1.662 hours more on total nonmarket work than non-married higher educated women. Thus, lower educated women are more likely to spend more hours on total nonmarket work once they married. It is also true that with the youngest child under age 5 and with one more child under age 18 in the household, higher educated working women are more likely to spend more hours on total childcare than lower educated ones. Additionally, the results show that lower educated immigrant women will spend 5.301 hours more on total nonmarket work and 5.620 hours less on total leisure time than lower educated native women. Higher educated immigrant women are positively associated with total market work time, negatively related with total leisure time.

Table 3-7 Multivariate OLS Regressions of Non-Working Women's Time Use Categories by Lower/Higher Education.

	Lower Education					Higher Education				
	Total childcare time	**Total market work time**	**Total nonmarket work time**	**Total leisure time**	**Others**	**Total childcare time**	**Total market work time**	**Total nonmarket work time**	**Total leisure time**	**Others**
Married	2.419**	-1.900*	4.482**	-5.043**	0.042	3.811**	-1.604	2.853**	-5.288**	0.228
	(0.752)	(0.817)	(0.959)	(1.240)	(0.804)	(0.838)	(0.896)	(0.992)	(1.235)	(0.871)
The youngest child is under age 5	7.679**	0.956	-1.063	-6.526**	-1.046	10.915**	-2.606**	-0.542	-4.634**	-3.131**
	(0.795)	(0.863)	(1.013)	(1.309)	(0.849)	(0.735)	(0.786)	(0.871)	(1.084)	(0.764)
Number of household children < 18	1.493**	-0.665*	0.912*	-2.343**	0.602	1.501**	-0.368	1.321**	-3.242**	0.787**
	(0.289)	(0.314)	(0.368)	(0.476)	(0.309)	(0.289)	(0.309)	(0.342)	(0.426)	(0.300)
Race: (White omitted)										
Black, non-Hispanic only	-4.485**	-0.405	-5.974**	7.878**	2.987**	-4.407**	7.830**	-5.818**	2.112	0.282
	(1.079)	(1.172)	(1.376)	(1.778)	(1.153)	(1.011)	(1.082)	(1.198)	(1.491)	(1.051)
Asian, non-Hispanic only	-5.950	-7.209	-5.813	25.021	-6.049	0.457	-0.890	-7.050	7.843	-0.360
	(8.127)	(8.823)	(10.361)	(13.386)	(8.680)	(3.953)	(4.230)	(4.683)	(5.828)	(4.110)
American Indian, native Hawaiian and multiple races	-0.420	-3.174	-2.163	-4.132	9.890**	-3.048	1.632	3.021	-3.417	1.811
	(2.324)	(2.524)	(2.964)	(3.829)	(2.483)	(1.949)	(2.086)	(2.309)	(2.874)	(2.026)
Hispanic	-3.958**	0.807	-2.071	2.940	2.282*	-1.998	1.432	2.657	-1.452	-0.639
	(1.088)	(1.181)	(1.387)	(1.792)	(1.162)	(1.335)	(1.429)	(1.582)	(1.969)	(1.388)
Asian immigrants	3.533	2.179	7.096	-24.738	11.928	-1.489	3.691	6.665	-7.584	-1.283
	(8.597)	(9.334)	(10.961)	(14.161)	(9.183)	(4.272)	(4.571)	(5.060)	(6.298)	(4.441)
Hispanic immigrants	-3.184	-0.639	1.576	7.082*	-4.835*	-5.815**	1.200	-2.887	5.170	2.332
	(2.042)	(2.217)	(2.603)	(3.363)	(2.181)	(2.103)	(2.250)	(2.491)	(3.100)	(2.186)
Immigrants to U.S.	6.729**	0.344	7.116*	-15.330**	1.140	2.610	-0.765	-2.958	1.039	0.074
	(2.329)	(2.528)	(2.969)	(3.836)	(2.487)	(2.337)	(2.501)	(2.769)	(3.446)	(2.430)
Immigrant's year of entry into the U.S.	-0.245*	-0.033	-0.051	0.303	0.026	-0.045	-0.152	0.286	-0.058	-0.030
	(0.106)	(0.116)	(0.136)	(0.176)	(0.114)	(0.136)	(0.146)	(0.162)	(0.201)	(0.142)

Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups. Notice that non-working women, who are unemployed or not in labor force, may have a small amount of total market work time because total market work time includes time spent searching a job, applying the unemployment benefits and so on. Lower education includes high school graduates (or GED equivalent) or less; higher education includes some college, college degree, and graduate education.

* Denotes significance at 5%. ** Denotes significance at 1%.

Table 3-8 Multivariate OLS Regressions of Working Women's Time Use Categories by Lower/Higher Education.

	Lower Education					Higher Education				
	Total childcare time	**Total market work time**	**Total nonmarket work time**	**Total leisure time**	**Others**	**Total childcare time**	**Total market work time**	**Total nonmarket work time**	**Total leisure time**	**Others**
Log hourly wages	-0.566**	3.170**	-1.025**	-0.634**	-0.944	-0.467**	3.122**	-1.080**	-0.950**	-0.616**
	(0.218)	(0.548)	(0.357)	(0.459)	(0.256)	(0.123)	(0.271)	(0.173)	(0.220)	(0.121)
Married	-0.805	-2.506*	3.098**	-0.138**	0.352	0.812*	-1.661*	1.662**	-1.476*	0.663
	(0.464)	(1.165)	(0.759)	(0.976)	(0.545)	(0.375)	(0.823)	(0.524)	(0.668)	(0.369)
The youngest child is under age 5	4.508**	-0.383	-1.488	-3.017	0.381**	8.163**	-3.478**	-0.441	-3.065**	-1.178**
	(0.544)	(1.368)	(0.891)	(1.145)	(0.639)	(0.370)	(0.812)	(0.517)	(0.659)	(0.364)
Number of household children < 18	0.865**	0.524	0.151	-1.708	0.166**	1.549**	-0.811*	0.826**	-2.067**	0.504**
	(0.232)	(0.584)	(0.380)	(0.489)	(0.273)	(0.180)	(0.396)	(0.252)	(0.321)	(0.177)
Race: (White omitted)										
Black, non-Hispanic only	-1.727**	2.094	-3.366**	1.389**	1.605	-2.789**	2.579*	-3.913**	1.359	2.762**
	(0.630)	(1.583)	(1.031)	(1.326)	(0.740)	(0.472)	(1.036)	(0.660)	(0.840)	(0.464)
Asian, non-Hispanic only	0.489	-0.170	5.587	-7.071	1.165	0.014	6.192	1.931	-5.047	-3.090*
	(2.715)	(6.821)	(4.443)	(5.711)	(3.189)	(1.447)	(3.178)	(2.024)	(2.578)	(1.425)
American Indian, native Hawaiian and multiple races	-0.320	-9.374*	2.522	4.330	2.842	-2.048	2.556	1.865	-1.464	-0.908
	(1.644)	(4.130)	(2.690)	(3.458)	(1.930)	(1.164)	(2.555)	(1.627)	(2.073)	(1.146)
Hispanic	-0.891	-0.349	0.583	1.172	-0.515	-2.302**	4.114**	-1.907*	-1.532	1.627**
	(0.744)	(1.869)	(1.218)	(1.565)	(0.874)	(0.630)	(1.383)	(0.880)	(1.122)	(0.620)
Asian immigrants	0.684	-0.881	-7.351	10.348	-2.799	-2.386	-6.341	0.236	6.795*	1.696
	(3.260)	(8.187)	(5.333)	(6.855)	(3.828)	(1.739)	(3.819)	(2.432)	(3.099)	(1.712)
Hispanic immigrants	-2.053	3.763	-0.780	-2.867	1.937	-2.541*	-7.217**	4.989**	7.579**	-2.810*
	(1.397)	(3.510)	(2.286)	(2.939)	(1.641)	(1.217)	(2.671)	(1.701)	(2.167)	(1.198)
Immigrants to U.S.	1.436	1.261	5.301*	-5.620*	-2.377	0.978	7.840**	-2.819	-5.507**	-0.491
	(1.604)	(4.029)	(2.624)	(3.373)	(1.883)	(1.175)	(2.579)	(1.643)	(2.093)	(1.156)
Immigrant's year of entry into the U.S.	-0.069	-0.187	-0.143	0.334	0.065	-0.013	-0.285	0.133	0.099	0.066
	(0.087)	(0.220)	(0.143)	(0.1849)	(0.103)	(0.071)	(0.156)	(0.099)	(0.127)	(0.070)

Note: Standard errors are in parentheses. All time use measures are expressed in units of "hours per week." All models include age, age squared and age cube, the day of week dummies, the month of year dummies, and survey year dummies. All regression coefficients are calculated using fixed demographic weights adjust to equally represent each day of the week within subgroups. Lower education includes high school graduates (or GED equivalent) or less; higher education includes some college, college degree, and graduate education.* Denotes significance at 5%. ** Denotes significance.

3.5 Conclusions

In this paper, I have documented that native and immigrant women have significantly different time allocation with their children. First, on average, immigrant women do not spend as much time as native women on total child care, but working immigrant women do spend more time with their children on educational child care than working native women. Second, higher education levels are related to more hours spent on educational child care for both native women and immigrant women. Within the same education level, immigrant women spent more hours on educational child care than native women. In general, working immigrant women spend more time on educational child care than working native women.

Moreover, the results of women's time use estimation by subcategories conclude that both working and non-working immigrant women spent less time on leisure than native women. It is interesting that non-working women's time use is affected by marriage directly. Married non-working women spend more hours on child care and nonmarket work but fewer hours on leisure than other non-working women (including single, widowed, divorced, and separated). Working women's time use is significantly affected by their hourly wages. Working women will work more and spend fewer hours on child care, nonmarket work and leisure if they have higher hourly wage. Similar to non-working women, married working women will spend more time on nonmarket work than other working women as well. Working immigrant women spend more time on market work and less time on leisure.

Due to the limitation of the data, this paper doesn't focus on Asian immigrant women's time allocation with children. In the future, Asian immigrant women's time allocation with children should be explored separately since on average Asian races spend significantly more

time on childcare. It will be interesting to examine Asian immigrant women's time allocation with their children and their time use categories.

3.6 Data Appendix

In this paper, I use the 2005-2011 American Time Use Surveys (ATUS) for the time allocation analysis. The American Time Use Surveys (ATUS), which is reported by the U.S. Bureau of Labor Statistics, provides nationally representative estimates of how individuals age 15 and over spend their time doing various activities, such as work, childcare, housework, watching television, volunteering, and socializing. Generally, the data files include information collected from over 148,000 interviews conducted from 2003 to 2013. ATUS data files can be linked to data files from the Current Population Survey (CPS), so it offers us more information about each individual.

This paper restricts the sample to include only those household members who were between the age of 21 and 55 with at least one child under age 18 in the household and who had a completed 24-hour time dairy. Because this paper tests and compares immigrant women and native women's time allocation with their children, I also limit the household member to be women only and separate them into two groups including immigrant women, who were born outside the United States, and native women, who were born in the United States.

One of the most challenges in comparing the time use data sets with each other is the fact that the surveys report time use at differing levels of aggregation. To generate consistent measures of time use across the surveys, I sort the raw ATUS data at the level of subcategories as in Aguiar and Hurst (2007). In order to render our analysis tractable across the surveys, I aggregated an individual's time allocation into twenty-two categories described in Table 3-9.

Each individual's dairy activities are sorted into four categories, including total child care, total market work, total nonmarket work, leisure and others. Within total child care, there are four subcategories and they are basic child care, educational child care, recreational child care and travel child care. Travel time associated with each activity is embedded in the total time spent on the activity, except for child care in which travel for the purpose of child care is considered as a separate classification.

The raw ATUS data in each of the surveys are reported in units of "minutes per day" (totaling 1,440 minutes per day). In this paper, all of the minute-per-day reports are converted to hours per week by multiplying the response by 7 and dividing by 60. When presenting the means from the raw ATUS data within each demographic cell, the data is weighted by using the sampling weights within each of the time use surveys. The weights account for differential response rates to ensure the samples are nationally representative. All weights are adjusted so that each day of the week and each survey are equally represented.

Table 3-9 Time Use Classifications.

Time use classification	Examples of activities included
Core market work	Work for pay, main job (including time spent working at home);work for pay, other jobs
Total market work	Core market work plus other work-related activities such as commuting to/from work; meals/breaks at work; searching for a job; applying for unemployment benefits
Core nonmarket work	Food preparation; food presentation; kitchen/food cleanup; washing/drying clothes; ironing; dusting; vacuuming; indoor cleaning; indoor painting; etc.
Shopping/obtaining goods and services	Grocery shopping; shopping for other goods; comparison shopping; clipping coupons; going to bank; going to post office; meeting with lawyer; going to veterinarian; etc. (excluding any time spent acquiring medical care)
Total nonmarket work	Core nonmarket work plus shopping/obtaining goods and services plus all other home production including: vehicle repair; outdoor repair; outdoor painting; yard work; pet care; gardening; etc.
Education	Taking classes for degree; personal interest courses; homework for coursework; research for coursework; etc.
Sleeping	Sleeping; naps
Personal care	Grooming; bathing; sex; going to the bathroom; etc. (excluding any time spent on own medical care)
Own medical care	Visiting doctor's/dentist's office (including time waiting); dressing wounds; taking insulin; etc.
Eating	Eating meals at home; eating meals away from home; etc.
Basic child care	Breast-feeding; rocking a child to sleep; general feeding; changing diapers; providing medical care to child; grooming child; etc.
Educational child care	Reading to children; teaching children; helping children with homework; attending meetings at a child's school; etc.
Recreational child care	Playing games with children; playing outdoors with children; attending a child's sporting event or dance recital; going to the zoo with children, taking walks with children; etc.
Travel child care	Driving a child to school, to a doctor, or to dance practice; etc.
Sports/exercise	Playing sports; attending sporting events; exercise
TV	Watching television
Entertainment (not TV)	Going to movies and theater; listening to music; computer use for leisure
Socializing	Attending/hosting social events; playing games; telephone calls
Reading	Reading books, magazines; personal mail; personal email
Gardening/pet care	Caring for lawn, garden, houseplants, and pets
Hobbies	Arts and crafts; collecting; playing musical instrument
Religious/civic activities	Religious practice/participation; fraternal organizations; volunteer work; union meetings; AA meetings; etc.

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4. THE EFFECT OF E-VERIFY MANDATES ON IMMIGRANTS' HOME OWNERSHIP

4.1 Introduction

4.1.1 Immigrants' Home Ownership

Every year, the United States attracts a large number of immigrants from all over the world. Immigrants have been the main driver of U.S. population growth. According to the Pew Research Center projections, 18 percent of the U.S. population will be immigrants in 2065, compared with 5 percent in 1965. The growth of immigrants has contributed significantly to the growth of the U.S. population.

Immigrants are not just adding numbers to the population, but also making a sizable contribution to the housing market. Immigrants play a very important role on both the demand and supply sides of the housing sector. This paper examines the effect of immigrants on home ownership, the demand side of the housing sector. According to the data from the 2015 American Community Survey, people who were foreign born occupied nearly 17.6 million housing units, including 8.9 million owner-occupied housing units and 8.7 million renter-occupied housing units. Moreover, the Research Institute for Housing America projects that immigrants constituted 39 percent of the growth in homeowners from 2000 to 2010 and in the decade 2010-2020 immigrants will account for 32.2 percent of the growth in households, 35.7 percent of the growth in homeowners and 26.4 percent of the growth in renter households.

Immigrants in this paper refer to pepople who are "foreign-born" in the United States. They may be naturalized citizens, legal permanent residents, visa holders or unauthorized immigrants. According to the 2015 American Community Survey 1-year estimates, there were 43 million immigrants. Of all, 48 percent of them were naturalized citizens, while the rest were not U.S.

citizens yet, but they could be legal permanent residents, visa holders or unauthorized immigrants. The unauthorized resident immigrant population refers to all foreign-born non-citizens who are not legal residents, defined by U.S. Department of Homeland Security[13]. U.S. Department of Homeland Security estimated that 11.4 million unauthorized immigrants lived in the United States in January 2012. Similarly, the Pew Research Center[14] estimated the total number of unauthorized immigrants were 11.1 million in 2014.

The decision to purchase a house is one of the most important decisions for every family, especially for the immigrant's family. There are many factors that influence the decision to purchase a house. The factors that influence native buyers' decisions also affect immigrants' housing decisions. In addition, immigrants' housing decisions are also highly correlated with and limited by immigration policy, such as E-Verify.

4.1.2 E-Verify Policy

E-Verify has been used in certain states since the mid-2000s. Today, E-Verify has been used nationwide by more than 600,000 employers of all sizes to verify their employees' eligibility to work legally in the United States. Also, about 1,400 new participating companies join E-Verify every week.

As a free web-based service, E-Verify helps employers verify the employment eligibility of newly hired employees. It is administrated by the U.S. Department of Homeland Security (DHS), USCIS, Verification Division, and the Social Security Administration (SSA). The enacted

[13] U.S. Department of Homeland Security.
https://www.dhs.gov/sites/default/files/publications/Unauthorized%20Immigrant%20Population%20Estimates%20in%20the%20US%20January%202012_0.pdf
[14] Pew Research Center.
http://www.pewhispanic.org/interactives/unauthorized-immigrants/

legislation requires the mandatory use of E-Verify that may include most employers, various public entities or contractors.

Starting in 2008, the Legal Arizona Workers Act (LAWA) mandates the use of E-Verify in Arizona. It requires all employers in Arizona to use E-Verify to confirm the employment authorization of all new employees hired after December 31, 2007. E-Verify has been used by more states over time. As of 2015, a total of 22 states require employers to verify workers' employment eligibility by using E-Verify[15]. They are: Alabama, Arizona, Colorado, Florida, Georgia, Idaho, Indiana, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, North Carolina, Oklahoma, Pennsylvania, South Carolina, Tennessee, Texas, Utah, Virginia and West Virginia.

In this paper, the research mainly focuses on the states that adopted E-Verify in 2012 and before, including Alabama (2011), Arizona (2007), Colorado (2008), Florida (2011), Georgia (2009), Idaho (2009), Indiana (2011), Louisiana (2011), Michigan (2012), Minnesota (2011), Mississippi (2008), Missouri (2008), Nebraska (2009), North Carolina (2011), Oklahoma (2007), Pennsylvania (2012), South Carolina (2008), Tennessee (2011), Utah (2008), Virginia (2010) and West Virginia (2012). E-Verify mandates in these states also are shown in Table 4-1.

[15] National Conference of State Legislatures: http://www.ncsl.org/research/immigration/state-e-verify-action.aspx

Table 4-1 States that Enacted the E-Verify Mandates in 2012 and Before 2012.

	State	Year Enacted	Applies to:
1	Alabama	2011	All employers (phase in) Contractors and subcontractors; prime contractors not liable for subcontractor complying with E-Verify unless they know of the violation
2	Arizona	2007	All employers
3	Colorado	2008	State agencies, contractors
4	Florida	2011	State agencies, contractors, subcontractors
5	Georgia	2009	Public employers, contractors, subcontractors with 500+ employees (phase in)
6	Idaho	2009	State agencies, contractors
7	Indiana	2011	State agencies, contractors
8	Louisiana	2011	State contractors; Option for private employers
9	Michigan	2012	State agencies, contractors, subcontractors
10	Minnesota	2011	Contracts in excess of $50,000 require vendors and subcontractors to use E-Verify
11	Mississippi	2008	All employers (phase in)
12	Missouri	2008	Public employers, contractors, subcontractors
13	Nebraska	2009	Public employers, contractors
14	North Carolina	2011	State agencies, universities; Localities, all employers (phase in)
15	Oklahoma	2007	Public employers, contractors, subcontractors
16	Pennsylvania	2012	Public contractors, subcontractors
17	South Carolina	2008	Public employers, contractors (phase in)
18	Tennessee	2011	All employers with 6+ employees (phase in)
19	Utah	2008	Public employers, contractors, subcontractors
20	Virginia	2010	State agencies
21	West Virginia	2012	Public Employers, contractors

Source: National Conference of State Legislatures[16].

[16] http://www.ncsl.org/research/immigration/everify-faq.aspx#Table:States Requiring E Verify

This paper aims to examine the housing decisions of immigrants and test how E-Verify mandates affect immigrants' housing decision and the changes in immigrants' home ownership in the states that adopted E-Verify mandates before and after the enacted year.

The next section discusses the potential effects of E-Verify mandates and previous research findings related to E-Verify. The third section explains the data. The fourth section explains the empirical methodolgy. The fifth section presents the results and the last section concludes.

4.2 Potential Effects of E-Verify Mandates and Previous Findings

As one of the biggest decision in a family, immigrants' home ownership is affected by many factors, such as buyers' age, employment, household income and immigrant status. There are many studies that have shown that E-Verify mandates have negative effects on immigrant workers' employment and incomes, which will affect immigrants' home ownership eventually.

E-Verify mandates affect unauthorized immigrant workers' employment and population. Bohn, Lofstrom, and Raphael (2013) find a notable reduction in the proportion of the Hispanic noncitizen population in Arizona after the 2007 Legal Arizona Workers Act (LAWA) implemented. Amuedo-Dorantes and Bansak (2012, 2013) conclude that E-Verify mandates, particularly those covering all employers, significantly reduced the employment likelihood of likely unauthorized male and female workers. Good (2013) finds that the implementation of state omnibus immigration legislation was associated with a 24 percent decrease in the population of likely unauthorized immigrants, and these states experienced a 10 percent decline in employment of likely unauthorized immigrants. Bohn and Lofstrom (2013) examine the impact of E-Verify on Arizona's workforce between 2007 and 2009 and find that the state's undocumented population declined by about 92,000 people, or about 17 percent, as workers left the state to look

for jobs, and also they found there is an increase in the rate of self-employment among likely unauthorized immigrants.

Moreover, some studies present the effects of E-Verify mandates on unauthorized immigrant workers' wages. Orrenius and Zavodny (2014) find that E-Verify reduced average hourly earnings among likely unauthorized male Mexican immigrants but increased labor force participation and employment among likely unauthorized female Mexican immigrants. Amuedo-Dorantes and Bansak (2012, 2013) find that E-Verify mandates appeared to have mixed effects on wages and may redistribute likely unauthorized labor towards certain industries.

Most of the previous researches conclude that E-Verify reduced the unauthorized immigrant workers' employments and wages; however, there is less research on the impact of E-Verify on immigrants' home ownership in the states that require employers to use E-Verify mandates.

Even though E-Verify intends primarily to prevent illegal immigrant from obtaining employment illegally in the United States and reduces the number of unauthorized immigrants living in a state, it still has unavoidable and unintended effects on immigrants, including the legal immigrants. Some legal immigrants or natives have household members, like siblings, parents, or a spouse, who are unauthorized. The legal immigrants or natives may have to leave the state and relocate their homes due to the E-Verify mandates' impact on their unauthorized family members.

The outflow of immigrants' employment as a result of E-Verify mandates' impact on immigrants may affect the immigrants' housing market in the states that adopted E-Verify mandates. To avoid the impact of E-Verify mandates, immigrants will move out of these states that require E-Verify and migrate to other states without such strict immigration policies. It is no

doubt that the decline in the number of immigrants in a state will have negative effects on the state's housing demand.

4.3 Data

In this paper, I use the American Community Survey (ACS) 1-year estimates during the period 2004-2015 to examine the effects of E-Verify mandates on immigrants' housing decision in the states that adopted the E-Verify mandates in 2012 and before 2012 relative to those states without mandates. The ACS is nationwide, continuous survey that provides demographic, housing social and economic data every year. It covers broad topics about the U.S. population. The ACS 1-year estimates used in this paper are very timely and released in the year immediately following collection. The ACS contains information on respondents' personal information, such as sex, age, marital status, educational attainments, family income, family structure, and origins. These information is very useful for exploring the factors that associated with respondents' housing decisions.

The ACS data are tabulated for a variety of different geographic areas ranging in size from broad geographic regions (Northeast, Midwest, South, and West) to cities, towns, neighborhoods, and census block groups. That offers the data all over the different states and allows me to examine the states where E-Verify mandates were implemented and distinguish the immigrants' housing decisions in the states that enacted E-Verify mandates and the states without E-Verify mandates.

Moreover, the ACS asks the respondents about the tenure status of households, one of the important factors used to determine home ownership. The house, apartment, or mobile home may be owned by the respondents or someone in this household, or rented. If a respondent reported that he/she owned the house, apartment or mobile home, he/she will be considered as a

"home owner". Financially, home owners may own the home with or without a mortgage or loan. In this paper, the tenure status of households is used to distinguish the respondents who own a house from the ones who do not own a house in the survey year.

Immigrants in this paper are defined as people who were not born in the United States, and may or may not be naturalized U.S. citizen. Sometimes, they are called as "foreign born". For any household head, if the years he/she lives in the United States is the same as his/her age he/she is considered as a native household head, otherwise, he/she is considered as an immigrant household head.

Table 4-2 reports descriptive statistics of the sample. In the sample, it includes 12,896,086 native household heads and 1,897,688 immigrants who are household heads as well. There are several interesting factors that need to be mentioned here. Of all, about 67 percent of native household heads are occupied home owners, compared with 55 percent of immigrants' household heads. On average, immigrants have more own children than natives. The average age of immigrants is 49 and the average years that immigrants lives in the United States are 31 years, which means that, on average, immigrants came to United States when they were 18 years old. Moreover, Figure 4-1 shows the sample distribution of immigrants' home owners by state.

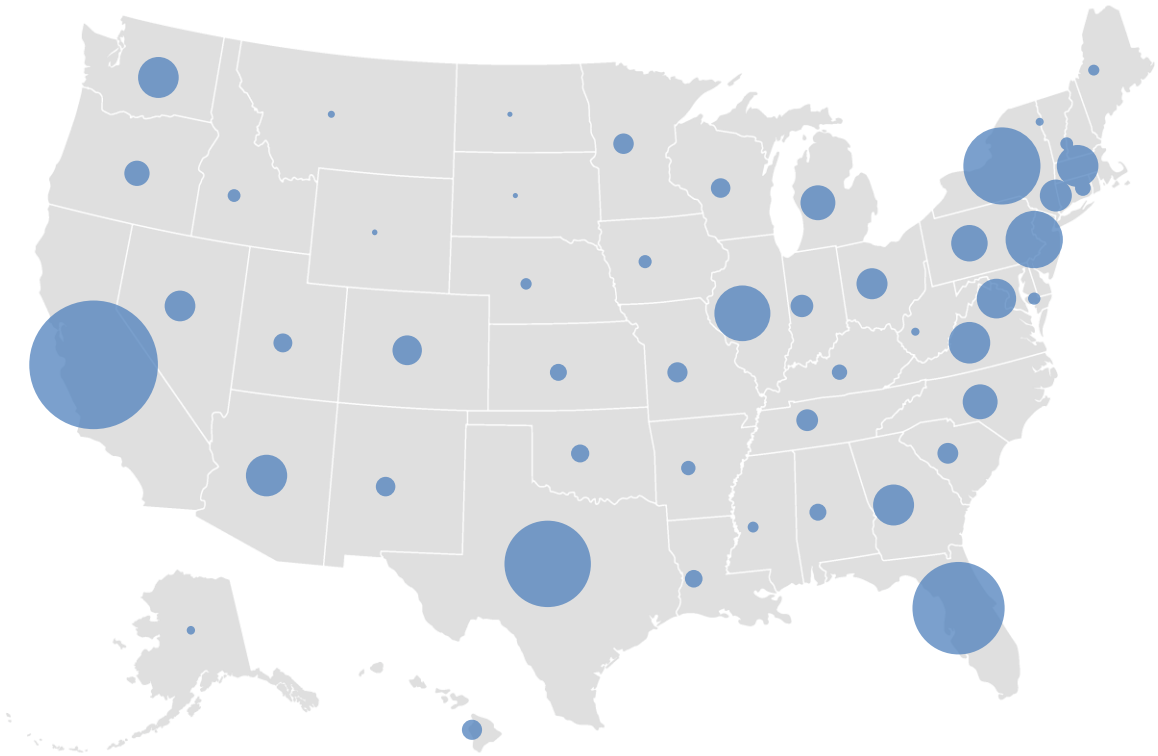

Figure 4-1 The Sample Distribution of Immigrants' Home Owners by State.

Table 4-2 Descriptive Statistics

	Native N=12,896,086 Mean	**Immigrants** N=1,897,688 Mean
Occupied home owner	0.68	0.55
Age	52.52	48.95
Marital status	0.61	0.66
Log income	10.77	10.76
Less than 15 years	0.36	0.45
High school graduated	0.20	0.15
some college	0.23	0.16
College graduate	0.21	0.24
Number of own children	0.47	0.76
Years that lives in U.S.	na	31.51

Source: This sample is from 2004-2015 ACS 1-year estimates.

4.4 Methodology

This paper uses a "difference-in-differences methodology" (DID) to estimate the impact of E-Verify mandates on the immigrants' home ownership status. In general, difference-in-differences methodology is used to estimate treatment effects comparing the pre- and post-treatment differences in the outcome of a treatment and a control group. The difference–in-differences methodology in this paper is used to examine the changes in immigrants' home ownership in the states before and after E-Verify mandates were implemented. So, the pre-treatment is the period before the enacted year of E-Verify mandates, while the post-treatment is the period after the enacted year of E-Verify mandates. The treatment group refers to all the states that adopted E-Verify mandates in 2012 and before 2012. There are totally twenty-one states, listed in the Table 4-1. The states that did not adopt E-Verify mandates in the specific year are all included in the control group. The difference-in-differences methodology is not likely to be affected by unobserved heterogeneity or ability bias. Orrenius and Zavodny (2014) used the similar approach to examine whether E-Verify mandates affect labor market outcomes among Mexican immigrants who are likely to be unauthorized.

The linear probability model is utilized to estimate the effects of E-Verify mandates on the immigrants' home ownership status with the difference in differences methodology and fixed effects. The specification is shown as below:

$$Y_{ist} = \beta_0 + \beta_1 State_{is} + \beta_2 Time_{it} + \beta_3 D^{Post}_{ist} + \beta_4 D^{Tr}_{ist} + \beta_5 D^{Post}_{ist} D^{Tr}_{ist} + \beta_6 X_{ist} + \beta_7 C_{ist} + \varepsilon_{ist} \quad (4.1)$$

Where i indexes household head, s indexes state and t indexes time. The dependent variable, $Y_{ist,}$ is outcome of interest that indicates the home ownership status of household head i.

Y_{ist} equals to one if a household head i owned the house that he/she lives in, otherwise it equals to zero.

D^{Post}_{ist} D^{Tr}_{ist} is a dummy variable indicating whether a household head i lives in a state that adopted an E-Verify mandate in a specific time. If the state adopted an E-Verify mandate and it happened in or after the effective year then D^{Post}_{ist} D^{Tr}_{ist} equals to 1; otherwise D^{Post}_{ist} D^{Tr}_{ist} equals to 0.

X_{ist} is a vector of control variables indicating the age, educational attainment, marital status, gender of the household head, the number of persons and children in the household, the logarithm of household income, and a variable indicating the number of years that the household head has resided in the United States. The year lives in the United States is set to zero if the household head is native-born. Also, C_{ist} controls for state-level business cycle conditions, including the average unemployment rate during the previous year; the log of real state GDP per capita during the previous year; the natural log of real state government expenditures per capita during the previous year; the number of housing permits; and the number of housing starts.

The regressions also include state and time fixed effects that control for unobservable state- or time-specific factors that may affect immigrants' home ownership status. The data is weighted using the ACS person's weight for generating statistics on individuals.

The approach used in this chapter assumes that whether a state adopts an E-Verify mandate is unrelated to factors that affect immigrants' home ownership in the state after controlling for business cycle conditions in the state. It means that it assumes that E-Verify mandates are exogenous.

The research examines the effects of E-Verify mandates on immigrants' home ownership in the states that adopted E-Verify mandates relative to states that do not. First of all, I examine

the factors that affect immigrants' home ownership without treatment. Then, using the DID methodology, I check the effects of E-Verify mandates on immigrants' home ownership. The regressions include state fixed effects, and year fixed effects. The estimated coefficient, $\beta_{3,}$ on D^{Post}_{ist} D^{Tr}_{ist} examines how immigrants' home ownership status changes in the states before and after the effective year. At last, the effects of E-Verify mandates on immigrants' labor force participation and earnings are examined as well.

4.5 Results

Table 4-3 presents the results of the key factors that affect immigrants' housing decisions without the effect of E-Verify mandates.

In the regression (1) and (2), the sample includes all people. In general, age, marital status, educational attainments, household income, and the number of own children are the important factors that affect people's decision to buy a home. The results show that people are more likely to own a home as they get older. Definitely, marriage is a plus for home ownership. Also, the results present that higher educational attainments, higher household income, and more own children have positive effects on people's housing decision and they are more likely to own a home.

Importantly, when immigrants are controlled in the regression (1), the results show that, holding all else constant, compared with natives, immigrants, who were not born in the United States, are 54.6 percentage points less likely to be home owners in the United States, even they are as well educated as natives and earn as much as natives.

Table 4-3 The Effect of Key Factors on Home Ownership Without Treatment

	ALL		Immigrants Only
	N=14,793,774	N=14,793,774	N=1,897,688
	(1)	(2)	(3)
Dependent Variable: if the household head owns the occupied house			
Age	0.157***	0.153***	0.135***
	(0.00002)	(0.00002)	(0.0001)
Age square	-0.001***	-0.001***	-0.001***
	(0.0000)	(0.0000)	(0.0000)
Marital status	0.970***	0.927***	0.723***
	(0.0002)	(0.0001)	(0.0004)
Log income	0.773***	0.786***	0.832***
	(0.0001)	(0.0001)	(0.0002)
High school graduated	0.271***	0.375***	0.163***
	(0.0003)	(0.0003)	(0.0006)
Some college	0.348***	0.475***	0.321***
	(0.0003)	(0.0002)	(0.0006)
College graduate	0.530***	0.626***	0.401***
	(0.0003)	(0.0003)	(0.0006)
Number of own children	0.088***	0.075***	0.153***
	(0.0001)	(0.0001)	(0.0002)
Immigrants	-0.546***	na	na
	(0.0002)		
Years in U.S.	na	na	0.042***
			(0.00001)

* p < 0.1; ** p < 0.05; *** p < 0.01

Notes: Each cell represents a separate linear probability regression. The regressions include controls for individual characteristics, the state business cycle, and state and time fixed effects. Standard errors are shown in the parentheses. Regression (1) includes all of the household heads with a control of immigrants; regression (2) includes all of the household heads without a control of immigrants; and regression (3) only includes the household heads who are immigrants (foreign born).

The sample in the regression (3) of the Table 4-3 includes immigrants only. In the regression (3), the results show the factors that affect immigrants' home ownership. Obviously, immigrants are more likely to own a home when they get older. Similar to the results from the regression (1) and (2), marital status and household income increase immigrants' home ownership. Holding all else constant, immigrants who are married are 72 percentage points more

likely to own a home than the ones who are not married. For immigrants, the possibility of owning a home will increase significantly as household income increases. Moreover, the years in the United States is another important factor that affect immigrants' home ownership. The results present that the longer they live in the United States, the more likely they will be home owners. Living in the United States longer means that they are getting older, may get married, have more children, be well-educated, find a decent job, earn more money and have more reasons to settle down.

Table 4-4 shows the effects of E-Verify mandates on immigrants' home ownership. The results from the regression (1) show that marriage, income, education and number of own children are all positively associated with people's home ownership; however, E-Verify mandates and immigrant status negatively affect people's home ownership. Immigrants are 54.6 percentage points less likely to own a home than natives, holding all else constant. In general, people living in the states with E-Verify mandates are 1.7 percentage points less likely to own a home than the ones living in the states without the treatment. In other words, immigrants are half as likely to own a home as natives, but E-Verify mandates reduces immigrant home ownership even further.

The regression (2) only includes immigrants. It is obvious that E-Verify mandates reduce the possibility of immigrants' home ownership. In the states that adopted E-Verify mandates, immigrants are 2.2 percentage points less likely to own a home than the ones in the states without E-Verify mandates. Like marriage, education, income and the number of own children, the years living in the United States positively affect immigrants' home ownership. Thus, immigrants, who are living in the United State one more year, are 4.4 percentage points more likely to own a home than others.

Table 4-4 The Effect of E-Verify Mandates on Immigrants' Home Ownership

	All	Immigrants Only	
	N=14,793,774	N=1,897,688	N=1,897,688
	(1)	(2)	(3)
Dependent Variable: if the household head owns the occupied house			
TREATMENT	-0.017***	-0.022***	-0.028***
	-0.0003	(0.0009)	(0.0012)
Age	0.157***	0.134***	0.134***
	(0.0000)	(0.0001)	(0.0001)
Age square	-0.001***	-0.001***	-0.001***
	(0.0000)	(0.0000)	(0.0000)
Marital status	0.970***	0.723***	0.723***
	(0.0002)	(0.0004)	(0.0004)
Log income	0.773***	0.832***	0.832***
	(0.0001)	(0.0002)	(0.0002)
High school graduated	0.272***	0.163***	0.162***
	(0.0002)	(0.0006)	(0.0006)
Some college	0.348***	0.321***	0.321***
	(0.0003)	(0.0006)	(0.0006)
College graduate	0.530***	0.402***	0.401***
	(0.0003)	(0.0006)	(0.0006)
Number of own children	0.088***	0.153***	0.153***
	(0.0001)	(0.0002)	(0.0002)
Immigrants	-0.546***		
	(0.0002)		
Years in U.S.		0.042***	0.042***
		(0.00002)	(0.00001)
LEAD1			-0.023***
			(0.0016)
LEAD2			0.020***
			(0.0016)
LEAD3			0.036***
			(0.0014)

* p < 0.1; ** p < 0.05; *** p < 0.01

Notes: Each cell represents a separate linear probability regression with the treatment. The regressions include controls for individual characteristics, the state business cycle, and state and time fixed effects. Standard errors are shown in the parentheses. Regression (1) includes all of the household heads; regression (2) only includes the household heads who are immigrants (foreign born); and regression (3) is the robustness check with three leads only including the household heads who are immigrants (foreign born).

Regression (3) illustrates the results of the robustness check with three leads. Each lead presents the pre-effect of E-Verify mandates on immigrants' home ownership. For example, "Lead 1" is a dummy variable including one year before the effective year of E-Verify mandates. "Lead 2" is a dummy variable including two years before the effective year of E-Verify mandates. "Lead 3" is a dummy variable including three years before the effective year of E-Verify mandates. The results show that E-Verify mandates have negative effects on immigrants' home ownership. Also, among all three leads, lead 1 has a negative coefficient, both lead 2 and lead 3 have significantly positive coefficients.

Prior to E-Verify, immigrants' home ownership is increasing, and then in the year before E-Verify mandates were adopted immigrants' home ownership decreases. It could be that immigrants are reacting to the announcement in anticipation of the policy. In some of the treatment states (i.e. AL, FL, MI and PA[17]), before E-Verify mandates were enforced in the whole states, some cities/counties in the states already started to use E-Verify mandates to verify the worker eligibility for all new hires. And also, for example, Florida enacted an E-Verify mandate in 2011. However, during 2010 campaign for governor, Republican Rick Scott stated on his website under the border security section that he would "require all Florida employers to use the free E-Verify system to ensure that their workers are legal." Even though E-Verify mandates were not yet adopted in the states, the pre-announcements, news, or signs already gave immigrants in the states that are more likely to adopt E-Verify mandates a warning and they adjusted their demand for housing accordingly. The effect of E-Verify mandates significantly reduced home ownership and the decline in immigrants' home ownership in the year before E-Verify mandates were adopted is predictable.

[17] E-Verify Requirements: Federal, State, County and Municipal levels. http://www.fairus.org/legislation/E-Verify_Requirements_Dec.pdf

Moreover, in order to check reverse causality, I test whether a state implements E-Verify is related to the size of immigrants' home ownership. All the data was sorted into state level. Instead of using a dummy variable for immigrants' home ownership, I use the share of immigrants that own homes as a dependent variable. Control variables indicate the age, educational attainment, marital status, gender of the household head, the number of persons and children in the household, the logarithm of household income, and the number of years that the household head has resided in the United States. The regressions also include the log of state real GDP per capita, the unemployment rate, housing permits, housing starts, and the log of real state government expenditures per capita (all lagged 1 year); state and year fixed effects; and state-specific linear time trends. Observations are weighted using the sum of the person weights. The same method is also used by Orrenius and Zavody (2016) to address whether increases in the population of likely unauthorized immigrants caused states to adopt an E-Verify law in their paper. As shown in Table 4-5, the result confirms the previous assumption that whether a state implements E-Verify is not related to the size of immigrants' home ownership. Thus, there is no reverse causality.

Table 4-5 Reverse Causality Test

Dependent Variable: Whether a state adopted E-Verify mandate	
Independent Variables:	
The share of immigrants	-7.528
	(4.6885)
Age	-2.195***
	(0.2232)
Age square	0.028***
	(0.0022)
Marital status	-4.200**
	(2.1183)
Log income	4.004***
	(0.8387)
High school graduated	-40.065***
	(1.833)
Some college	-63.200***
	(2.2502)
College graduate	-8.800***
	(1.0578)
Number of own children	-0.495
	(0.8429)
Years in U.S.	0.560***
	(0.0622)
Sample Size	612

* p < 0.1; ** p < 0.05; *** p < 0.01

Notes: These data are based on state averages. The regression includes the log of state real GDP per capita, the unemployment rate, housing permits, housing starts, and the log of real state government expenditures per capita (all lagged 1 year); state and year fixed effects; and state-specific linear time trends. Observations are weighted using the sum of the person weights. Standard errors are robust and clustered on state.

Using the state level data, I also test the impact of the share of immigrants on the share of home ownership and E-Verify impact on the share of immigrants' home ownership. The results reveal that the share of immigrants is negatively associated with the share of home ownership and E-Verify mandates have significantly negative effects on the share of immigrants' home ownership, confirming the previous results from individual level analysis. The results are shown in Appendix Table 4-8 and Table 4-9.

Additionally, Table 4-6 and Table 4-7 present the effects of E-Verify mandates on labor force participation. The results show that E-Verify mandates negatively effects on immigrants' labor force participation significantly, meaning E-Verify mandates reduce immigrants' labor force participation in the state that adopted E-Verify mandates. In the states that adopted E-Verify mandates, immigrants are 2.5 percentage points less likely to join the labor force than the ones in the states without E-Verify mandates.

Table 4-6 The Effect of Key Factors on Labor Force Participation Without Treatment

	ALL		**Immigrants Only**
	N=14,793,774	**N=14,793,774**	**N=1,897,688**
	(1)	(2)	**(3)**
Dependent Variable: Labor Force Participation			
Age	0.138***	0.139***	0.241***
	(0.000034)	(0.000034)	(0.000094)
Age square	-0.002***	-0.002***	-0.003***
	(0.0000003381)	(0.000000338)	(0.0000009653)
Marital status	-0.547***	-0.523***	-0.472***
	(0.000185)	(0.000184)	(0.000481)
Log income	0.804***	0.795***	0.693***
	(0.000093)	(0.000092)	(0.00023)
High school graduated	0.373***	0.303***	0.231***
	(0.000315)	(0.00031)	(0.00068)
Some college	0.447***	0.365***	0.237***
	(0.000316)	(0.000309)	(0.000709)
College graduate	0.544***	0.477***	0.338***
	(0.000332)	(0.000327)	(0.000698)
Number of own children	-0.139***	-0.129***	-0.132***
	(0.00009)	(0.00009)	(0.000198)
Immigrants	0.347***	na	na
	(0.000242)		
Years in U.S.	na	na	-0.011***
			(0.000018)

* p < 0.1; ** p < 0.05; *** p < 0.01

Notes: Each column represents a separate linear probability regression. The regressions include controls for individual characteristics, the state business cycle, and state and time fixed effects. Standard errors are shown in the parentheses. Regression (1) includes all of the household heads with a control of immigrants; regression (2) includes all of the household heads without a control of immigrants; and regression (3) only includes the household heads who are immigrants (foreign born).

Table 4-7 The Effect of E-Verify Mandates on Labor Force Participation

	All	Immigrants Only	
	N=14,793,774	N=1,897,688	N=1,897,688
	(1)	(2)	(3)
Dependent Variable: Labor Force Participation			
TREATMENT	-0.02***	-0.025***	-0.02***
	(0.000326)	(0.00106)	(0.00161)
Age	0.137***	0.241***	0.241***
	(0.000034)	(0.000094)	(0.000094)
Age square	-0.002***	-0.003***	-0.003***
	(0.0000003381)	(0.0000009653)	(0.0000009654)
Marital status	-0.547***	-0.472***	-0.472***
	(0.000185)	(0.000481)	(0.000481)
Log income	0.804***	0.693***	0.693***
	(0.000093)	(0.00023)	(0.00023)
High school graduated	0.373***	0.231***	0.230***
	(0.000315)	(0.00068)	(0.00068)
Some college	0.448***	0.237***	0.237***
	(0.000316)	(0.000709)	(0.00071)
College graduate	0.544***	0.338***	0.338***
	(0.000332)	(0.000698)	(0.000699)
Number of own children	-0.139***	-0.132***	-0.132***
	(0.00009)	(0.000198)	(0.000198)
Immigrants	0.347***		
	(0.000242)		
Years in U.S.		-0.011***	-0.011***
		(0.000018)	(0.000018)
LEAD1			-0.043***
			(0.00203)
LEAD2			0.040***
			(0.00208)
LEAD3			0.016***
			(0.00171)

* p < 0.1; ** p < 0.05; *** p < 0.01

Notes: Each cell represents a separate linear probability regression with the treatment. The regressions include controls for individual characteristics, the state business cycle, and state and time fixed effects. Standard errors are shown in the parentheses. Regression (1) includes all of the household heads; regression (2) only includes the household heads who are immigrants (foreign born); and regression (3) is the robustness check with three leads only including the household heads who are immigrants (foreign born).

In terms of earnings, the results with E-Verify mandates are not statistically significant for all immigrants. Similarly, Orrenuis and Zavodny (2014) found that earning increase only among Mexican men who are naturalized U.S. citizens and U.S. born Hispanics, the other results are not significant. Amuedo-Dorantes and Bansak (2012) point out that the mandates lower wages among male likely unauthorized immigrants and increase wages among female likely unauthorized immigrants. It seems that earning impacts on immigrants are closely driven by the selection of group of people. Earnings may fall for unauthorized immigrant workers in the state that adopted E-Verify but rise for workers who are substitutes for unauthorized immigrant workers, such as naturalized citizens. So, when I test the earning impact on ALL immigrants, the results show no significant effects on earnings, which is consistent with other researchers' results.

4.6 Conclusions

E-Verify mandates are used to help employers verify the employment eligibility of newly hired employees, and reduce the unauthorized immigrant workers in the United States. However, based on the previous research and the results illustrated above, E-Verify mandates not only affect the unauthorized immigrant workers' employment, but also have negative impacts on all immigrants' home ownership. Immigrants living in the states that adopted E-Verify mandates are less likely to own homes, or purchase houses there. There are couple explanations for the results. It could be that it works through the effect on income. Alternatively, it could be that E-Verify mandates creates uncertainty and hostility making immigrants less likely to commit to living in the state that adopted E-Verify mandates.

As E-Verify becomes more and more popular, the impact of E-Verify mandates on immigrants' housing decisions are unavoidable. It will be interesting to explore other effects of

E-Verify mandates and examine how E-Verify mandates affect immigrants in different ways. For example, E-Verify may cause the outflow of immigrants who living in the states that adopted E-Verify mandates and the inflow of immigrants in other states. It may be possible to track the relocation of immigrants from one state to other state and examine how E-Verify mandates change immigrants' relocation choice.

4.7 Appendix

Table 4-8 The Impact of the Share of Immigrants on Home Ownership

Dependent Variable: The Share of Home Ownership	
Independent Variables:	
The share of immigrants	-0.142**
	(0.0602)
Age	0.034***
	(0.0054)
Age square	-0.0003***
	(0.0001)
Marital status	0.456***
	(0.0663)
Log income	0.081**
	(0.0215)
High school graduated	0.058**
	(0.0223)
Some college	-0.008
	(0.0235)
College graduate	0.019
	(0.0219)
Number of own children	-0.124***
	(0.0303)
Years in U.S.	-0.001
	(0.0022)

* p < 0.1; ** p < 0.05; *** p < 0.01

Notes: The regression includes the log of state real GDP per capita, the unemployment rate, housing permits, housing starts, and the log of real state government expenditures per capita (all lagged 1 year); state and year fixed effects; and state-specific linear time trends. Observations are weighted using the sum of the person weights. Standard errors are robust and clustered on state.

Table 4-9 With and Without E-Verify Effect on the Share of Immigrants Home Ownership

Dependent Variable: The Share of Home Ownership			
All Population		**Immigrants Only**	
Independent Variables:			
The Share of Immigrants	0.469***	**TREATMENT**	-0.004***
	(0.0438)		(0.0013)
Age	-0.002	**Age**	0.0005
	(0.0039)		(0.0025)
Age square	-0.000	**Age square**	-0.000
	(0.00004)		(0.00002)
Marital status	0.277***	**Marital status**	0.120***
	(0.04824)		(0.0249)
Log income	-0.005	**Log income**	0.005
	(0.0157)		(0.0088)
High school graduated	-0.058***	**High school graduated**	0.024
	(0.0163)		(0.0147)
Some college	-0.085***	**Some college**	-0.062***
	(0.0171)		(0.0150)
College graduate	-0.023	**College graduate**	0.028***
	(0.0159)		(0.0099)
Number of own children	-0.030	**Number of own children**	-0.006
	(0.0220)		(0.0084)
Years in U.S.	0.002	**Years in U.S.**	0.001**
	(0.0016)		(0.0008)

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: The regression includes the log of state real GDP per capita, the unemployment rate, housing permits, housing starts, and the log of real state government expenditures per capita (all lagged 1 year); state and year fixed effects; and state-specific linear time trends. Observations are weighted using the sum of the person weights. Standard errors are robust and clustered on state.

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